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ABSTRACT

This handbook is designed to provide Ohio's vocational teachers with guidelines and materials for assessing student performance in the areas of academic, occupational, and employability skills. Chapter 1 examines assessment in the context of the educational reform agenda and efforts to link assessment and instruction and reviews the purposes of assessment. Reasons why assessing student learning is important to learners, teachers, administrators, and employers are detailed in chapter 2, and sources of information about the types of academic, occupational, and employability skills that vocational and career educators should assess are discussed in chapter 3. Chapters 4-8, which detail the steps in planning, conducting, and tracking assessments, include information on the following: planning assessments (curriculum frameworks, alignment with instructional goals, examining processes and products of learning, focusing on performance objectives, making assessment authentic, and developing self-assessment skills); assessing cognitive learning (developing and administering written tests and using alternatives to written tests); assessing affective learning; assessing psychomotor learning (specifying and developing performance tests for regular and special needs students); and tracking and reporting results (learner profiles, career passports, and external certification. Contains 32 references. (MN)

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ASSESSING
LEARNING

Lowell E. Hedges
Valija M. Axelrod

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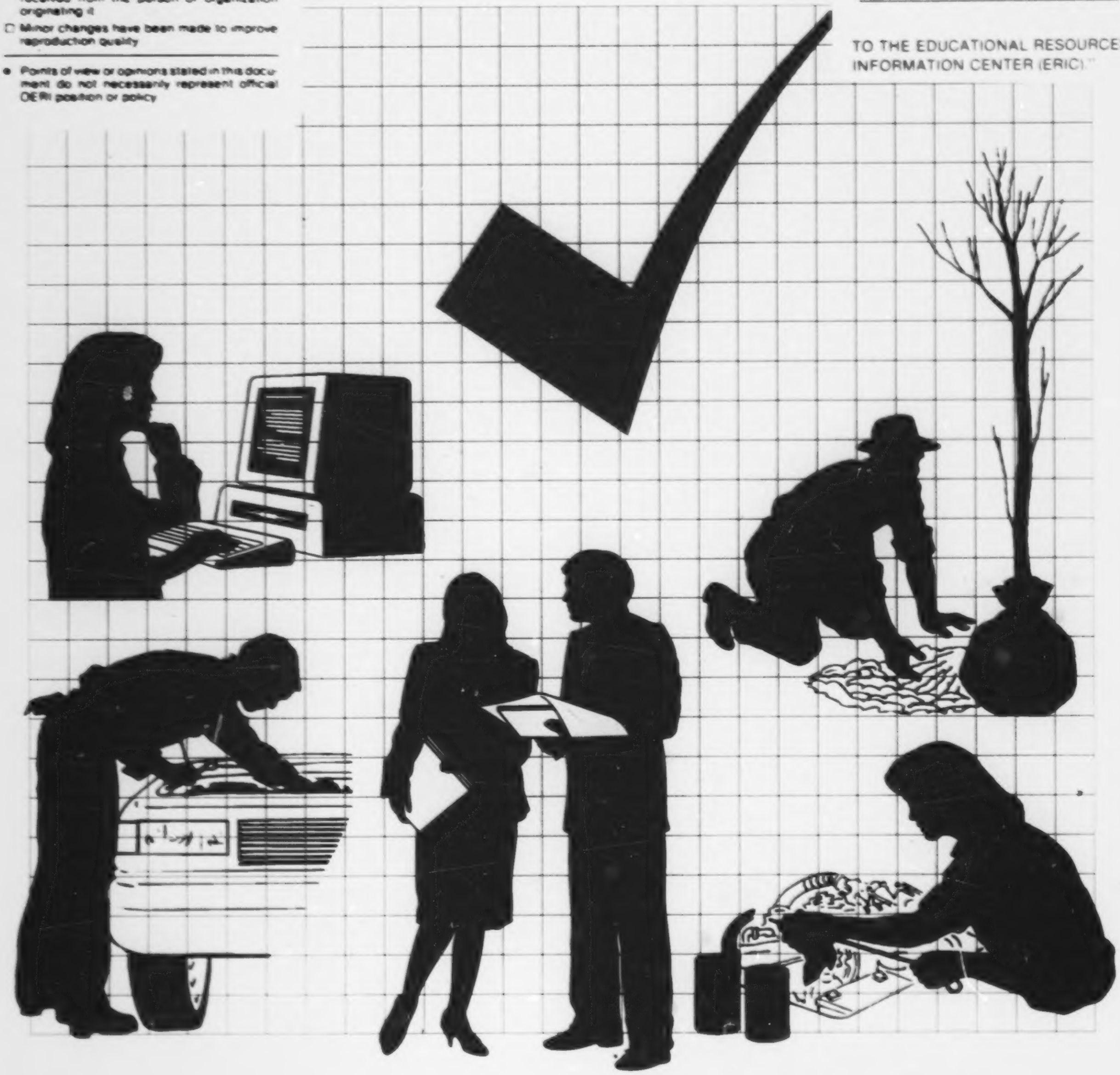

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Assessing Learning

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1995

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Foreword

Ohio's vocational teachers are being required to pay even more attention to educational outcomes—and to a broader set of outcomes than ever before, including academic achievement, as well as occupational and employability skill attainment. This document, *Assessing Learning*, was developed to help meet these increasing requirements. As teachers acquire more skill in assessing learning, they will be better equipped to accumulate evidence that students are learning and mastering essential knowledge and skills and to document the degree of achievement relative to the identified outcomes. This evidence forms part of each student's Career Passport.

It is the intention of this publication to provide teachers with an easy-to-understand reference guide. It includes a multitude of assessment examples to increase the reader's level of understanding of all three learning domains: cognitive, affective, and psychomotor.

The work of Dr. Hedges and Dr. Axelrod provides the information teachers need to become effective developers and users of student assessment. When teachers' assessments provide more and better information about student learning, this can have a direct impact on their ability to determine the strengths and weaknesses of the instruction they provide. Thus, by adding this essential text to its product line, the VIML hopes to provide teachers with a key tool for bringing about a transformation in the learning process in the classroom.

Deborah Bingham Catri, Ph.D.
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Acknowledgements

Dr. Deborah Bingham Catri, Director, Vocational Instructional Materials Laboratory, The Ohio State University, extended the invitation to put many separate course and workshop materials together into one publication. This book is a result of her guidance and encouragement. Her leadership and her vision for high-quality teaching and assessment in vocational, academic, and Tech Prep programs are much appreciated.

Appreciation is also extended to teachers and administrators who have been members of the Agricultural Education 790 courses, The Ohio State University, taught at the Eastland Joint Vocational School (Eastland Career Center and Fairfield Career Center). Practicing teachers and administrators have tested, in their respective programs and courses, the concepts and techniques contained in this publication. We have included examples of assessment items and techniques from several of these teachers.

We are grateful for the assistance and cooperation of Mr. Claude Graves, Superintendent of the Eastland Joint Vocational School District; Mr. Ross Dunlap, Associate Superintendent; and Mr. Craig Brelsford, Staff Development Coordinator, for facilitating the offering of these courses.

The concepts and techniques of assessing learning in the classroom and laboratory included in this book were field tested by many teachers throughout the state of Ohio. However, we are especially indebted to the teachers of the Toledo Agricultural Education Center, Toledo, Ohio, for their time and skill in reviewing this publication for practicality and utility, and for providing suggestions for its content and format.

Penny Collins	Animal Care
Colleen Garrett	Animal Care
Sue Taylor	Animal Care
Michelle Bogue	Floriculture
Jim Ladd	Floriculture
Kevin McCann	Landscape
George Dunaeff	Mechanical Engineering
Diane DeYonker	Natural Resources
John White	Natural Resources

To Lois G. Harrington, Instructional Design Specialist, Center on Education and Training for Employment, The Ohio State University, who edited each draft of the manuscript, we owe an indefinable debt of gratitude for her attention to detail and for massaging ideas to make them understandable to all readers.

Our thanks also go to Amelia Anne Boye, Graphic Illustrator, Agricultural Education Curriculum Materials Service, The Ohio State University, for designing the cover of this publication.

Publications of this nature are invariably family projects. Therefore, we gratefully acknowledge the support and understanding, as well as the sacrifices, provided by our respective spouses, Donna Hedges and Arnold Axelrod.

About the Authors

Dr. Lowell E. Hedges is an Associate Professor Emeritus, Department of Agricultural Education, The Ohio State University, Columbus, Ohio. Since coming to the university in 1979, Dr. Hedges has taught undergraduate- and graduate-level courses in curriculum development, teaching methods, assessing student learning, development and use of instructional materials, teaching the low-motivated student, and contemporary problems in vocational education. He directed the student teaching program of the department and also the 36-credit-hour certification program for persons coming from business and industry to teach vocational education. Dr. Hedges continues to assist the Department of Agricultural Education as supervising teacher educator for the certification program for teachers and also conducts workshops throughout Ohio in course of study development for vocational and Tech Prep programs.

Before coming to The Ohio State University, Dr. Hedges taught vocational agriculture in the Green Camp and Elgin High Schools for 15 years and was curriculum director and later superintendent of the Elgin Local School District. From 1969 through 1974, he directed the revision of the district's courses of study, basing the revisions on student performance objectives developed in cooperation with the faculty.

Dr. Hedges has served as Consultant in Agricultural Education in India (Regional College of Education, Ajmer, Rajasthan) and also assisted in the preliminary studies for establishing a Department of Agricultural Education and Extension, Makerere University, Kampala, Uganda.

Dr. Valija M. Axelrod is President of Powell International, Inc., a company dedicated to the improvement of education and training in the public and private sectors worldwide. With experience in the Caribbean, Latin America, Asia, Europe, and the United States, Dr. Axelrod has worked to establish vocational education and training programs, conducted train-the-trainer programs, upgraded teacher education projects, developed student assessment programs, and other training activities.

Dr. Axelrod has worked closely with the City and Guilds of London Institute, the City and Guilds of North America, and U.S. secondary and postsecondary institutions to strengthen student assessment practices. This work included the development of new assessment programs, adaptation of existing City and Guilds programs for North America, and workshops on criterion-referenced competency testing. As a result of her service, she was awarded an honorary membership in the City and Guilds of London Institute.

Prior to her current position, Dr. Axelrod served as the director of international program development and research specialist at the Center on Education and Training for Employment and previously the National Center for Research in Vocational Education, The Ohio State University. At the Center, she was responsible for building a continuing program of research, service, and leadership for strengthening vocational education and training systems internationally.

Introduction

We are pleased to provide you with this easy-to-understand handbook for assessing student learning in the classroom. Assessment of student learning is one of the major challenges facing vocational education teachers. This handbook is designed to improve your ability to plan and implement assessments that go beyond reporting of student achievement in terms of letter grades at year or term end.

Assessing Learning is designed to help you assess student performance in three skill areas: academic skills, occupational skills, and employability skills. Separate chapters of the handbook are devoted to assessment of learning in three major domains: cognitive, affective, and psychomotor. The handbook also provides a wealth of alternative assessment techniques.

It is our hope that this handbook will assist you in the classroom and thereby help bring about a transformation of the learning process in your school and community. As educators, we are all concerned about our future workforce in terms of quality and competitiveness.

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Chapter 1

What Is Assessment?

Learner outcomes reflect knowledge, skill, and attitudes.

Assessment is a process involving the collection and analysis of pertinent information to judge educational outcomes. It is also conducted to determine how education can be improved. Judging educational outcomes can refer to the school, program, classroom, or student levels. In this handbook, we are most concerned with student outcomes. Student outcomes are the knowledge, skill, and attitudes that learners are expected to attain as a result of their educational experience.

Focus of Educational Reform Agenda

Employers want better-prepared students.

Reform of education has been encouraged by many groups since the early 1980s. An important study, *A Nation at Risk*, showed that our nation's schools were not preparing students who could perform well (National Commission on Excellence in Education, 1983). Employers are one of the groups that has had a major concern. Employers want better education and better prepared students to help increase America's competitiveness in a global market. Educators themselves believe that reform is needed.

All educational reform efforts emphasize accountability.

Much emphasis is still being placed on the reform of American education. Some reform efforts are encouraging total redesign of the educational system. Other reform efforts concentrate on strategies that would change and improve classroom teaching. All reform efforts place particular importance on educational accountability. Schools and teachers are being encouraged to pay more attention to educational outcomes. They are also encouraged to look at a broader set of outcomes than ever before.

Academic achievement is important to vocational teachers.

Vocational teachers must now look at academic achievement as well as occupational skill attainment. Student learning in the basic and more advanced academic skills is as important to the vocational teacher as it is to the academic teacher.

Goals 2000 identifies principles for long-term success.

The experiences of many leaders working on educational reform shaped the *Goals 2000: Educate America Act*, which was signed into law on March 31, 1994. *Goals 2000* focuses on the need for high expectations for students. It also embodies other principles that are important for long-term success (U.S. Department of Education, 1994a, pp 6-7):

- Participation by parents, educators and communities in education
- Safe, drug-free and disciplined learning environments
- Quality teacher training and professional development
- Effective use of technology in the classroom
- Long-term systemwide improvement efforts
- School improvement efforts customized by communities and states to meet their needs

National Goals for the Year 2000

The act includes eight national education goals to be achieved by the year 2000:

- All children in America will start school ready to learn.
- The high school graduation rate will increase to at least 90 percent.
- All students will demonstrate competence in challenging subject matter.
- U.S. students will be the first in the world in math and science.
- Every adult American will be literate and possess the knowledge and skills necessary to compete in a global economy.
- Every school in America will be safe, disciplined and drug-free.
- All teachers will have access to programs for continued professional development needed to prepare U.S. students for the next century.
- Every school will promote parental involvement in their children's education (U.S. Department of Education, 1994b).

Students must reach high standards.

The Goals 2000 Act is an effort aimed at helping students reach high standards. Other education and training programs fit within the Goals 2000 framework of challenging academic and occupational standards. The *School-to-Work Opportunities Act*, for example, supports state and local efforts to build a school-to-work transition system. This system will help learners acquire the knowledge, skills, abilities, and labor market information they need to make a smooth transition from school to the workplace. Students in these programs will be expected to meet the same academic standards established under Goals 2000 and, at the same time, earn portable, industry-recognized skill certificates that are benchmarked to high-quality standards.

The Perkins Act seeks to strengthen academic and technical skills.

The 1990 Carl D. Perkins Act also embodies many reforms. This act seeks to strengthen the academic and technical skills of students in vocational education by—

- requiring the development of statewide performance standards and measures;
- integrating academic and vocational curricula;
- promoting 2 + 2 tech-prep programs that link high schools with postsecondary institutions; and
- supporting work experience programs, such as apprenticeships and cooperative education (U.S. Department of Education, 1994c).

The act demands an accountability system built around outcomes, measures, and standards.

The Perkins Act demands an accountability system built around outcomes, measures, and standards. Outcomes are the student- and program-level accomplishments, including the mastery of academic and occupational skills. Measures are ways of determining the attainment of outcomes. Standards are the expected level for acceptable performance.

You, as a classroom teacher, are in the best position to plan and carry out improvements in the way that teaching and learning are done. We urge you, therefore, to take an active role in determining what your students should know and be able to do, in increasing opportunities for all students to meet those standards, and in conducting good assessments.

Linking Assessment and Instruction

Expectations for student learning must be challenging.

Good assessment reflects the curriculum and training that students receive. The reform movement places considerable emphasis on **challenging** expectations for student learning. In the absence of such specified outcomes, it is easy to put too much emphasis on lower-level skills, which are easier to teach and assess.

Curriculum frameworks provide a basis for designing assessments.

State curriculum frameworks provide a basis for developing quality assessments. In Ohio, for example, comprehensive and verified employer competency lists have been developed for 39 programs. Each of these lists, known as an Occupational Competency Analysis Profile (OCAP), provides a framework for designing courses of study and for developing assessments that are tied directly to the competencies on the lists.

The competencies are based in reality and result from an analysis of practice in the real world. These competencies are not the educator's ideas of expected outcomes for a program but are based on the knowledge and skills required for proficient performance at the job-entry level.

Students must be actively involved in the learning process.

In using curriculum frameworks for instructional development, we consider basic learning principles. Meaningful instruction involves students actively in the learning process. Furthermore, learning occurs only when students process new information or knowledge in such a way that it makes sense to them. As a teacher you are probably already giving attention to designing learning environments that incorporate as many different forms of experience as possible. You use a variety of instructional strategies and involve students in meaningful activities to achieve specific learning goals. As a good teacher, you must also constantly assess how your students are doing.

Assessment must consider how learning takes place.

A renewed emphasis on how students learn places an increased emphasis on assessment. Traditional multiple-choice tests are insufficient by themselves for assessing meaningful learning. Many forms of assessment and new forms of assessment are needed to capture the occupational, academic, and employability skills that we expect of our students.

Ten Principles of Quality Assessments

General principles for improving the quality of assessments include—

- Assessment should be purposeful.
- Assessment should emphasize the application and use of knowledge rather than recall.
- Assessment should give consideration to the learning process as well as the outcomes of student learning.
- Assessment should be based on criteria or standards for competencies, abilities, or skills.
- Assessment should provide for samples over time in addition to one-time samples.
- Assessment should be carried out in an environment that promotes inquiry and learner growth.
- Assessment should involve all learners in the process actively.
- Assessment should be results-oriented.
- Assessment should provide opportunities for group, as well as individual, performance.
- Assessment should be cost-effective.

Purposes of Assessment

The most overlooked step in designing an assessment is the clear identification of the purpose for conducting the assessment. In other words, what do you plan to do with the results of the assessment? What aspects of student performance are most important for you to know about?

Assessment results serve at least two purposes.

As a vocational classroom teacher, we anticipate that you will use assessment results for at least two major purposes: first, to identify the extent to which your students have attained knowledge and skills; and second, to determine how students reached or why they failed to reach expected outcomes.

Assessment in the first sense is an appraisal or estimation of an individual's degree of ability by whatever means (e.g., interviews, course work, assignments, practical tasks, observations, projects, portfolios, written tests). Assessment may also be used for diagnostic and improvement purposes. In this instance, you will want an assessment that provides information about the process of learning as well as the outcome or product of student learning.

Chapter 2

Why Assess Student Learning?

Assessment serves important needs at all levels of the educational system and in the broader community. Assessment provides a means for the educational system to judge its progress and to make resource allocation decisions. Assessment encourages learning and provides the direction for improvement of instruction.

Renewed emphasis is being placed on performance assessment today.

The most traditional form of assessment in education has been the multiple-choice, standardized achievement test. Today, the term performance assessment is used to distinguish assessment that examines and judges a student's actual or simulated performance on tasks that are relevant to the real world. This form of assessment is at the core of the methods for assessing student learning in the classroom.

Assessment—

- *encourages learning and skills development*
- *provides motivation for student learning*
- *determines strengths and weaknesses of instruction*

Importance to Learners

One of the major aims of assessment is to encourage learning and skill development. Assessment serves to motivate student learning and provides a gauge of individual student progress. One of the most important ways for improving achievement is to tell students in the clearest language possible what is expected of them. These clear expectations (performance criteria) are at the heart of all good assessments.

For the student, the results of assessments are often translated into classroom grades, hire or no-hire decisions, and college admission decisions. These influences provide added motivation to student learning.

Importance to Teachers

Assessment provides important information to teachers for determining the strengths and weaknesses of their instruction. What instructional units or approaches worked best? Which did not work well based on student performance results?

Assessment also provides important information about the student. What students were able to master particular competencies or skills? What gave them the greatest trouble?

Importance to Administrators

- *provides information for decision making*

For administrators, assessment results provide information that is vital to decision making. Decisions related to resource allocation, facilities, staff development, and materials are made on the basis of assessments.

Importance to Employers

- *helps in employer hiring decisions*

Employers have been critical of the educational system for many years. With performance assessment, we start with standards that students should achieve. These standards are developed in conjunction with business, industry, and labor. Results of the performance assessments tell employers that students have the skills they want.

Chapter 3

What Should Be Assessed?

Restructuring efforts can guide assessment of learning.

School restructuring efforts provide a valuable resource for guiding assessment design (Herman, Aschbacher and Winters, 1992). As a part of its modernization process, the Ohio Department of Education (1990) revised its mission statement to guide Ohio's vocational and career education system:

> The mission of the vocational and career education system is to prepare youths and adults, in an efficient and timely fashion, to make informed career choices and to successfully enter, compete, and advance in a changing work world. This broadened mission will be achieved in concert with educational and business communities by offering comprehensive education, training, and support services that develop the following:
>
> - **Occupational skills**—those skills involving the technical abilities to perform required workplace tasks, including problem solving and critical thinking.
> - **Academic skills**—those core competencies necessary to prepare for and secure a career, facilitate lifelong learning, and assure success in a global economy.
> - **Employability skills**—those personal development and leadership abilities essential for increased productivity, economic self-sufficiency, career flexibility, business ownership, and effective management of work and family commitments.

Preparation for the world of work requires academic, occupational, and employability skills.

Assessment of student progress in the classroom must consider all three skill areas to ensure that students are prepared for the world of work.

Academic Skills

Learners need strong conceptual and academic skills.

The growing emphasis on technology and new forms of organization in the workplace have increased the need for students to have strong conceptual and academic skills. The Perkins Act also emphasizes the importance of academic education in vocational programs.

A solid academic foundation—including a thorough understanding of and skills in math, science, communications, and social studies—is important for students facing the challenges of a competitive workplace.

SCANS skills include foundation skills and thinking skills.

The Secretary's Commission on Achieving Necessary Skills (SCANS) analyzed the skills that would be needed by the future American workforce. The SCANS report (U.S. Department of Labor, 1992) identified reading, writing, arithmetic, and listening as basic foundation skills that continue to be important to the workforce. They also identified a cluster of thinking skills comprising five functional skills that are important to all jobs: speaking, creative thinking, decision making, problem solving, and seeing things in the mind's eye.

Today, assessment of student's academic skills is as important in the vocational classroom as it is in the academic classroom.

Occupational Skills

Occupational skills must reflect current technology and be relevant to the workplace.

Working closely with representatives from business and industry in identifying the occupational skills to be taught ensures that they reflect changing technology and remain relevant to the workplace. The OCAPs are comprehensive and verified employer competency lists that provide direction for instruction as well as assessment.

School districts are encouraged to add to the material in the OCAP lists to reflect local employment needs, trends, and specialties. Involvement of program advisory committees with strong employer representation is important to ensure relevance to the workplace.

Employability Skills

In addition to the employability skills found in the OCAPs, three of the SCANS foundation skills relate to employability skills (U.S. Department of Labor, 1992):

Employability skills are needed for effective management of work and family commitments.

Responsibility

- Exerts a high level of effort and perseverance toward goal attainment.
- Works hard to become excellent at doing tasks by setting high standards, paying attention to details, working well and displaying a high level of concentration even when assigned an unpleasant task.
- Displays high standards of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks.

Social

- Demonstrates understanding, friendliness, adaptability, empathy and politeness in new and on-going group settings.
- Asserts self in familiar and unfamiliar social situations; relates well to others; responds appropriately as the situation requires; takes an interest in what others say and do.

Self-Management

- Assesses own knowledge, skills, and abilities accurately; sets well-defined and realistic personal goals; monitors progress toward goal attainment and motivates self through goal achievement.
- Exhibits self-control and responds to feedback unemotionally and non-defensively; is a "self-starter."

Methods other than traditional tests are needed.

Methods other than traditional tests are needed to find out how students think and to discover where they are having difficulties with employability skills. In fact, careful planning is required to accurately assess the three different areas of student performance: academic skills, occupational skills, and employability skills.

Chapter 4

How Do You Plan the Assessment?

Curriculum frameworks guide the assessment.

Competency builders lead to attainment of a competency.

Curriculum Frameworks

Curriculum frameworks set out the best thinking in the field about the knowledge, processes, and skills students need to know. A framework provides a structure within which to organize other important educational components. Assessments, like instruction, should reflect the content of the framework. For frameworks to provide the type of guidance necessary to improve instruction and plan assessment, they must be of the highest quality.

The OCAPs serve as Ohio's curriculum framework. Essentially, an OCAP is an outline made up of the following elements:

- **Units**

  Example: Unit 4 Job-Seeking Skills
- **Competencies**

  Example: 4.4 Demonstrate interviewing skills
- **Competency Builders**

  Example: 4.4.1 Investigate interview procedures

  4.4.2 Demonstrate appropriate behaviors (e.g., appearance, hygiene, and demeanor) for the interview

  4.4.3 Demonstrate question-and-answer techniques

  4.4.4 Demonstrate methods for handling difficult and/or illegal interview questions

  4.4.5 Use correct grammar and concise wording

Assessment should be aligned with instructional goals.

Alignment with Instructional Goals

The first five items ("4 x 5") in "The Instructional Link: The 4 x 8 Pack of Effective Teaching Tools" (Hedges, unpublished) provides an excellent overview for the vocational teacher in instructional planning:

I. **Four Functions of the Vocational Teacher**
   1. Teaching
   2. Administration and Management
   3. Occupational Technician
   4. Student Counseling

II. **Four Curriculum Planning Decisions**
   1. Who to teach?
   2. What to teach (to the who)?
   3. When to teach (the what to the who)?
   4. How long to teach (the what to the who, when)?

III. **Four Questions for Every Teacher during Planning**
   1. Where are we now?
   2. Where are we going?
   3. What steps do we take to get there?
   4. How do we know we've arrived?

IV. **Four Steps in Lesson Planning (Allen 4-Step)**
   1. Preparation
   2. Presentation
   3. Application
   4. Evaluation

V. **Four Steps in the Learning Process**
   1. Presenting Stimuli
   2. Receiving Stimuli
   3. Perceiving Stimuli
   4. Acting on Perceptions (Learning Occurs)

Guidelines for Learner Assessment

A careful examination of these steps shows that they have implications not only for instruction but also for assessment (Herman, Aschbacher, and Winters, 1992):

1. Integrate assessment into the curriculum. Assessment does not have to occur in a formal testing setting.
2. Provide learners with the opportunity to demonstrate skills and knowledge in natural settings.
3. Conduct assessments at convenient times.
4. Provide choices to students in how they will show mastery or competency. An in-class assignment, a role play, or a project can be as indicative of mastery as a written test.
5. Provide students with opportunities for self-assessment and peer review.
6. Solicit student input for determining criteria and standards.
7. Consider assessing groups of learners rather than individual students.

Assessment is an integral part of instruction.

In other words, assessment is an integral part of instruction. You must first consider instructional goals before you can design meaningful assessments. You may use a variety of assessment methods to determine learner outcomes.

Examining Processes and Products of Learning

Two additional elements of "The 4 x 8 Pack of Effective Teaching Tools" (Hedges, unpublished) speak directly to assessing the learning process and learning outcomes:

Approach to Student-Centered Lesson Planning

VI. Four-Question Interest Approach to Student-Centered Lesson Planning and Teaching

1. How important is ____________________?
2. What problems have we had with ____________?
3. What do we need to know or be able to do to prevent and/or correct these problems?
4. What specific information do we need for each of these "things" we said we need to know or be able to do?

Reasons for Performance Objectives

VII. Four Reasons for a Performance Objective

1. Helps identify those behaviors that students are already exhibiting prior to presenting a lesson designed to produce those behaviors.
2. Identifies expected learner outcomes for a given lesson or unit of study.
3. Serves as the basis for selection and organization of materials and experiences for effective learning.
4. Provides a systematic means of devising ways of evaluating student performance.

Correlation of Teaching Tools III and VII

These four reasons for student performance objectives are not to be taken lightly. When correlated with Teaching Tool III (Four Questions for Every Teacher during Planning), the four reasons for objectives and the four planning questions provide the basis for the planning, teaching, learning, and assessing processes. For example, suppose you are going to teach to the following student performance objective:

> **Write a business letter** *when given the receiver's address and a sample scenario.* All items on the performance assessment should be rated yes.

As indicated by the second of the Four Reasons for a Performance Objective, this objective indicates what outcome is expected from the lesson: being able to write a business letter. Reason 1, then, would prompt you to give some type of pretest to see what your students already know about writing business letters. A properly written student performance objective will also provide direction for the answers to the last two planning questions: "What steps do we take to get there?" and "How do we know if we've arrived?"

Focus on Performance Objectives

A performance objective describes what the learner will be like upon successful completion of a learning experience (Mager, 1975). In some way, the learner will be changed. This change can occur in three learning domains (Bloom, 1956): knowing certain information (cognitive domain), performing certain physical activities (psychomotor domain), or exhibiting certain personal qualities or attitudes (affective domain).

Cognitive domain objectives require learners to demonstrate knowledge.

Cognitive domain . . .

includes those performances that require knowledge of specific information; e.g., the principles, concepts, and generalizations necessary to problem solving. We are primarily concerned that the student have the knowledge required to perform the task. An example of a student performance objective in the cognitive domain would be—

- **Define editing symbols** *on a given list* with 90% accuracy.

Psychomotor domain objectives require learners to demonstrate skills.

Psychomotor domain . . .

measures the skill performance of the student and, therefore, the performance required will involve the manipulation of objects, tools, supplies, or equipment. Concern here is that the student have the necessary neuromuscular coordination to perform the task. An example of a student performance objective in the psychomotor domain would be—

- **Wash hands following aseptic techniques** *when provided with sink and soap.* Performance assessment must be completed with 100% accuracy.

Affective domain objectives require learners to demonstrate attitudes.

Affective domain . . .

measures the performance required to demonstrate feelings, attitudes, or sensitivities toward other people, ideas, or things. We are most concerned here that the student will do the task after learning to do it. An example of a student performance objective in the affective domain would be—

- **Demonstrate concern for safety of self and others** by (a) pointing out safety hazards to others; (b) turning off all equipment when it is not being used; and (c) observing all caution signs *when in the food service laboratory.*

Steps in Assessment Planning

Planning of assessment involves—

- *analyzing the competencies*
- *identifying the aspects to assess*
- *identifying appropriate settings*

Across all domains, planning the assessment requires the following steps:

1. ***Analyze the competencies in terms of their content and behavioral components.*** In planning the assessment, you must use the process of analysis to determine what is to be evaluated. Larger components may need to be broken down into smaller ones.
2. ***Identify aspects of student knowledge, skills, and attitudes to be assessed.*** As you identify the major aspects to be assessed, you must also give attention to which of the aspects are quantifiable and which need to be dealt with qualitatively.
3. ***Identify situations and settings most likely to provide opportunities for demonstration of the behaviors to be assessed.*** What on-the-job or simulated opportunities can be designed to demonstrate experience with job skills? Can the assessment be carried out with groups of students? Should the assessment take place in the lab, the classroom, or another setting?

- *determining appropriate assessment methods*

4. ***Determine which assessment methods best meet the purposes of the evaluation desired.*** More than one method will be necessary when complex behaviors are to be assessed. Types of measures that you will want to consider include—
    - Written (including tests, reports, studies)
    - Oral (including interviews, debates, discussions, role playing)
    - Experiential (including work placements, simulations)
    - Portfolios

- *establishing a means for data collection and reporting*

5. ***Establish means for collecting, interpreting, and using assessment results.*** Different assessment methods will require different kinds of record keeping. For example, the results of a paper-and-pencil test might be a numerical score. The results of an observation may be a performance checklist.

Making Assessment Authentic

The term *authentic* is defined in the dictionary (*The American Heritage Dictionary*, 1989) as meaning "genuine, real . . . worthy of trust, reliance, or belief . . . ."

Authentic assessment is based on nonarbitrary standards.

An assessment system for measuring student learning, in order to be authentic, has to be based on known, clear, public, nonarbitrary standards or criteria (Wiggins, 1993). Properly written student performance objectives contain a criterion component, a statement of expected standards of performance. The objective, therefore, reveals the tasks, criteria, and/or standards ahead of the time at which the student is tested.

In the real world of work, the "tests" are known from day one. The brick layer knows that the rows of bricks must be straight and level. The basketball player knows that the ball must go through the hoop. But, unfortunately, students in our schools don't always know, ahead of performance, what standards are required of them.

Rubrics explain specific standards of performance.

Many assessment instruments make use of a rubric to explain specific standards of performance. A rubric is a scoring device consisting of a fixed scale and a list of characteristics describing performance of each of the points in the scale. A rubric is a vehicle that guides human judgment (Marzano, Pickering, and McTighe, 1993). For example:

Overall Evaluation	
Level Achieved	**Performance Levels**
	5 Can perform this skill without supervision and with initiative and adaptability to problem situations.
	4 Can perform this skill satisfactorily without assistance and supervision.
	3 Can perform this skill satisfactorily but requires some assistance and/or supervision.
	2 Can perform parts of this skill satisfactorily but requires considerable assistance and/or supervision.
	1 Cannot perform this skill
Instructor will indicate level achieved.	

Source: Orange County Public Schools, 1982

If we are to be fair to the students, we must realize that "standards aren't standards" in the true sense of the word until they are identified. Therefore, rubrics should be presented to students along with the performance task specified in the student performance objective.

Authenticity is also a factor in the test results; you must test for the "terminal performance" (the action verb in the performance component of the student performance objective) or you may end up testing only subskills. To help ensure that your assessment of student learning is authentic, there should be three-way performance agreement between—

- what you said the student would learn (student performance objective);
- what you actually taught (content of the lesson); and

- what skills you assessed at the end of the lesson (performance test).

For example, below are a student performance objective and several test items. Some test items are appropriate for testing the objective; some are not. Circle the letter of the item that **is authentic** for testing the objective and underline the action verb.

1. **Construct a bluebird house** *when given the plans, appropriate tools, fasteners, and wood.* Finished product should match the sample house displayed in the lab.

Test Items:

a. Identify the hand tools and explain the functions of each.

b. Construct a bluebird house according to the given plans, using the tools, fasteners, and wood.

c. List, in proper sequence, the steps required to construct a birdhouse.

d. Describe the advantages of following the blueprints in constructing a bluebird house.

The correct answer—the authentic assessment—is *b*.

Self-Assessment Skills Are Necessary

Models help learners develop the ability to assess their own performance accurately.

A learner must see and understand progress in his/her craft. Models of various levels of performance must be available for study and for comparison. For example, if the student in the Resource Conservation program is being taught to build a bluebird house, the student needs to see samples of the houses that correspond to the points in the assessment scale.

If the rubric has a scale of 1 to 4 (a most common range), with 4 being the "best" performance, the teacher should have available for study and comparison a "Model 4" birdhouse—also a "Model 3," a "Model 2," and a "Model 1." The student needs to see samples of the scores, whether the performance is a corsage, an essay, a painted automobile hood, styled hair, a word-processed business letter, or two pieces of metal fused together with the oxyacetylene torch.

For effective learning, there must be in place a cycle of "model-practice-feedback-refinement" (Wiggins, 1993).

Students must be assisted in applying performance criteria to their own work. Students cannot always be dependent on the teacher—or another person—for assessment. Self-assessment skills (and desire) are essential for a skilled worker, regardless of the occupation.

Perhaps the student should be required to submit a self-assessment (grade, checklist, oral evaluation) with all pieces of work given to the teacher for assessment. With adequate performance "roadsigns" (or models), this will be possible for the student.

Performance roadsigns help eliminate student questions.

Performance "roadsigns" will help eliminate student questions such as "Is this what you want?" "Am I doing it right?" "Is this okay?" Both learning and assessment will be authentic—genuine, real . . . worthy of trust, reliance, or belief.

Chapter 5

How Is Cognitive Learning Assessed?

The knowledge level requires only the ability to recall information.

The comprehension level requires the lowest level of understanding.

The cognitive domain as outlined by Bloom (1956, pp. 201-207) is made up of six levels of behavior or objectives. These behaviors range from the simple to the complex, as follows:.

1. ***Knowledge.*** Knowledge is defined as the remembering of previously learned material. Test questions at this level of behavior ask whether learners understand specific terms or recall concepts, patterns, classifications, specifics, etc., not whether they can process information such as using it to make decisions. Knowledge represents the lowest level of learning outcomes in the cognitive domain. Examples of test items at this level—

   - What is the official bird for the state of Ohio?
   - Who is the president of our VICA chapter?

2. ***Comprehension.*** Comprehension is defined as the ability to grasp the meaning of material. In other words, the student must be able to organize previously learned material so that he or she can rephrase it—describe it in his or her own words. The student is expected to use data to project outcomes, to translate knowledge from words to symbols, or to handle the thought process of "What would happen if . . . ?" These learning outcomes go one step beyond the simple remembering of material and represent the lowest level of understanding. Examples of test items at this level—

   - Explain in your own words the meaning of the diagram.
   - What would happen if you used a monotone voice when speaking in public?

The application level requires the ability to use learned material in new ways.

3. ***Application.*** Application refers to the ability to use learned material in new and real-life situations, primarily the solving of problems. The learner would be expected to apply successfully in a practical way such things as rules, methods, concepts, principles, laws, and theories. Learners are asked to apply successfully some understanding or techniques to a problem situation. Learning outcomes in this area require a higher level of understanding than those under comprehension. Examples of test items at this level—

   - You wish to purchase a new carpet for the family room in your home. The room measures 14 feet by 18 feet. How much carpet will you need to purchase?
   - What would happen if you used diesel fuel in a gasoline engine?

The analysis level requires an understanding of content and structure.

4. ***Analysis.*** Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. To analyze successfully requires an understanding of both the content and the structural form of the material. Test items are often stated in terms of requiring the student to inspect, debate, or solve a malfunctioning system. Examples of test items at this level—

   - From our discussion on human behavior, what are the basic assumptions we must accept regarding people?
   - Explain the steps for creating the L-Pattern design floral arrangement.

The synthesis level requires the ability to put parts together to form a new whole.

5. ***Synthesis.*** Synthesis refers to the ability to put parts together to form a new unified entity, utilizing some rational design. The learner is expected to be creative and to formulate new patterns or structures. In effect, synthesis questions require students to (a) solve problems, (b) make predictions, (c) assemble or construct some structure, or (d) produce original items of communication. An example of a test item at this level—

   - Devise a plan to handle dairy surpluses.

The evaluation level requires the ability to make value judgments.

6. ***Evaluation.*** Evaluation is concerned with the ability to judge the value of material for a stated purpose. Definite criteria serve as the basis of the judgments to determine an item's relative value or worth. Learners use the criteria to appraise, choose, measure, or critically inspect some idea or object. Learning outcomes in this area are highest in the cognitive hierarchy. The outcomes contain elements of all of the other categories, plus value judgments based on clearly defined criteria. Examples of test items requiring the learner to make a judgment—
   - Which statement below would explain whether the weld is one of high quality?
   - Please compare these two tomatoes for quality of color.

The paper-and-pencil test can effectively be used to assess student learning in the cognitive domain. In fact, it is the most commonly used method. However, you may want to consider other assessment methods as well.

Developing Written Tests

A test specification is the first step.

The first step in developing a written test is to develop a test specification. At a minimum, the test specification should include the following:

- Total number of items to be included on the test
- Number of items for each section of the unit and/or objective to reflect their relative importance
- Types of items to be included on the test
- Amount of time allowed for the test

Tips for Constructing Written Tests

When building your next written test, try applying these basic rules:

A specific purpose for the test must be identified.

1. ***Have a specific purpose for the test.*** Some purposes for a test may be to (a) determine strengths and weaknesses of your students, i.e., to diagnose entry-level competency of new trainees; (b) to determine how well you have taught and to help you do a better job of teaching; (c) to determine the effectiveness of teaching methods and visual aids, demonstrations, field trips, and other instructional methods; (d) to help your students learn the basic fundamentals of the lessons via immediate feedback during the learning process; and (e) to help determine the student's grades, i.e., assessing trainees' mastery of each competency and competency builder.

Student performance objectives serve as the guide.

2. ***Use the student performance objectives as your guide.*** If your student performance objectives are constructed properly, the objective should imply clearly the kind of assessment items appropriate for sampling the behavior you are interested in developing in the student. Clearly formulated objectives help students grasp what they must learn. For the teacher, clearly formulated objectives serve as a guide for the development of appropriate test items.

A sufficient number of test items must be prepared.

3. ***Prepare at least ten assessment items—preferably more.*** If your test is to diagnose student strengths and weaknesses, enough questions should be asked to sufficiently cover the subject matter.

Tests should cover what was taught.

4. ***Test on what was taught in class.*** There should be "performance agreement" between the performance component in the objective, the content taught in the lesson, and the performance being assessed in the test. You will need to make certain that the type of test item used for measuring each objective is the one that will best measure that objective. Performance agreement helps ensure that the test is valid, i.e., it measures what it is supposed to measure.

Tests should cover critical points of learning.

5. ***Test on critical points of learning.*** Test items should reveal a student's ability to apply known principles, to interpret, to draw conclusions from given data, and to solve problems. Do not emphasize inconsequential details. If you do, then students will also emphasize details and will neglect principles and generalizations.

Which Type of Question to Use

Open-ended questions and limited-choice questions are the two major types of written tests.

There are two main types of questions used to build a written test: the open-ended question and the limited-choice question. There are no specific rules to tell you which type of question to use. However, it will be easier to decide if you keep the characteristics of each clearly in mind.

The position of the test in the lesson plan will have an influence on the type of question used. Certain types lend themselves best to quizzes, while others are better suited to reviews, unit tests, weekly tests, or final examinations.

Quizzes can be administered easily.

A quiz can be easily and quickly administered by using limited-choice questions such as true-false, multiple-choice, or completion. These item types can be easily graded by having students exchange papers and mark them in class. You may or may not wish to record the grades. Short-answer, open-ended questions may also be used but should be graded by you.

An examination should use a variety of item types. A balance can be achieved by using the open-ended type and a combination of limited-choice questions. Variety adds interest and also gives students of varying levels of ability and capacity a chance to achieve partial success in the examination.

How to Write Open-Ended Questions

An open-ended item requires the student to give a relatively free written response to a question—usually a problem situation. The answer is usually one or more sentences in length. However, some open-ended questions may even require several pages for a complete answer.

Open-ended items are best used to measure higher-level cognitive skills.

The open-ended test item is best adapted to measuring higher-level intellectual skills such as reasoning required in inference, organization of ideas, comparison, and contrast. The student's ability to organize and express his/her ideas effectively can be judged by the use of the open-ended test. Students are forced to consider available facts, select those which are applicable, and express their conclusions or responses in their own words.

A good test is one that can be judged without bias.

A good open-ended test, in order to be reliable (stability of test scores) and valid (measures what it claims to measure), should be one that can be evaluated without bias, prejudice, or otherwise being influenced by personal impressions. As a teacher, you must avoid being impressed with (a) the legibility of the handwriting; (b) the quantity of writing; (c) the style of writing rather than the content (beware of the student who says nothing, but who says it well with smooth, flowing prose); (d) the interpersonal relationship that you have with the student (is the student a "good" student or a "bad" student?); (e) the previous work of the student in class during the year; and (f) the relative value of the paper when you compare it with others. An average paper looks good when preceded by a series of poor papers; an average paper looks poor when preceded by excellent papers.

The above precautions emphasize some of the common criticisms aimed at the open-ended test item. Another criticism is that the test taker cannot clearly comprehend the meaning of the question. Such questions may fail to indicate the response that you expect from the student.

The meaning of the open-ended assessment item must be absolutely clear.

Consider the following questions. Are the responses desired by you, the teacher, clear to the test taker?

1. Tell what you know about fertilizing the lawn.
2. Tell what happens when grain is run through a combine.

The test taker could write on the above questions for a considerable length of time and perhaps not give the response that you desire. The student would waste his/her time by guessing what you really want as a response. And you would waste your own time by reading the lengthy responses.

Let us rewrite the previous questions, limiting the scope of the answers to specific parts of the main topic.

1. Recommend a fertilization program for a bluegrass lawn for late spring.
2. Describe the principle by which grain is separated from the straw in the combine.

Do's and Don'ts in Writing Open-Ended Test Items

In writing open-ended test items, it is important to—

- *use words that specify the intent of the answer*
- *use the action verbs contained in the performance objectives*

1. **Don't** write the test item so broadly that the test taker cannot clearly comprehend the meaning of the question.
2. **Do** begin the test item with *Why*, *How*, *With what consequences*, or *With what significance*. These words restrict the answer—specify more clearly the intent of the question. Avoid beginning the question with words such as *Discuss*, *Explain*, or *Outline*. These words invite too lengthy and, many times, irrelevant answers.
3. **Do**, when formulating the question, use the action verbs normally included in the student performance objectives. Require the student to compare or contrast, explain why, evaluate differences, or construct a defense for some issue, idea, or concept.
4. **Do**, before grading the test, list the basic facts that each question is to bring out. Assign specific credit points to each key fact. The weight given to each fact or item should be in proportion to its importance. This technique makes scoring more reliable—more objective, less subjective.
5. **Do**, when grading the test, read all papers for one question at a time rather than all papers straight through. This way, comparison of answers will be sharper.
6. **Do** score separately from subject-matter content any credit given for penmanship, spelling, and grammatical expression. Give two grades for the test.

- *use positive feedback*

7. **Do** include helpful and encouraging comments on the essay test as a form of meaningful feedback.

8. **Don't** permit the student a choice among several questions. It is difficult to arrive at comparable scores for students who answer different questions. Also, students may use incorrect judgment in choosing the questions they feel they can best answer.

How to Write Limited-Choice Questions

Five Major Types of Limited-Choice Questions

Limited-choice questions, generally speaking, are classified into five major types:

1. Multiple-choice
2. Matching
3. Completion
4. True-false
5. Interpretation of data

There are, of course, numerous variations among these types.

Limited-choice questions have the following advantages over the open-ended type:

- Better coverage of total course content. Students can answer many more questions in the same amount of time.
- Objectivity of scoring is relatively high. There is less chance for the teacher to use personal opinion in grading the test. Questions usually have only one acceptable response.
- Much time is saved by the teacher in grading the test. Limited-choice questions are easily and quickly graded.
- Identification of student weaknesses is an easier job and results in a more dependable measure of what a student knows. Students are forced to answer a question directly and have little opportunity to dodge the intent of the question.

Types of Test Items

Different item types should be considered.

In planning assessment of cognitive objectives, you will want to consider different types of written tests or test item types. Each has advantages and disadvantages.

Multiple-Choice Items

The "key" is the correct response option for a multiple-choice item.

A multiple-choice test item consists of a direct question, a fill-in-the-blank statement, or an incomplete statement followed by a series of possible responses or options. The question or statement is called the "stem." It is relatively long; and the responses or options, relatively short. Each of the options shows an answer. Only one of the options, known as the "key," is correct. The other three options, known as the "distractors," are wrong but seem plausible to students who lack understanding.

The multiple-choice type of test can be used at most class levels and for most subject areas. Multiple-choice test items are being used in Ohio to test student proficiency in a specific OCAP competency or competency builder.

Many authors have provided suggestions for writing test items. The Do's and Don'ts in writing test items presented in this section are based on their work (Horton, 1991; Hunkins, 1976; Sparzo, 1990; VIML, 1991; Wolansky, 1985; and Wood, 1960).

Do's and Don'ts in Writing Multiple-Choice Test Items

In writing multiple-choice items, it is important to—

1. **Do** use four responses. Three choices are too few, and five are too difficult to devise.
2. **Do** list responses by lowercase letters.
3. **Do** use numerals for all numbers unless the number is the first word of a stem or scenario.

- *make all answer choices plausible responses*

4. **Do** make all answer choices appear plausible to the test taker not knowing the correct answer. All responses

must be slanted toward the problem specified in the stem, and they should all be related to the same subject. Incorrect responses should represent common errors in student thinking and should distract, not confuse. A distractor should not be obviously incorrect or unrelated.

5. **Do** avoid repetition in responses. The stem should include any words that would otherwise have to be repeated in each response **unless** the retention of common words in all the responses makes the test item easier to understand.

- *avoid overlapping responses*

6. **Do** avoid overlapping responses. By overlapping responses, two or more correct answers may be unintentionally created. For example, assume two responses are worded, "a. Less than 20%," and "b. Less than 25%." If "a" is correct, then "b" is also correct.

7. **Do** vary the position of the correct response. Put the right response in the first, second, third and fourth positions equally.

8. **Don't** use *a* or *an* as final words in the stem or use any other words that will give a clue to the correct choice.

- *make certain that the stem does not reveal the correct answer*

9. **Do** ensure that stems do not reveal answers of other items. The stems in a test should be independent of each other. The information contained in one test item should not reveal the answer to another item.

10. **Do** make answer choices of relatively uniform length. Some test makers include the largest number of words in the correct answer. Students soon detect this procedure.

11. **Do** make the stem—or the stem together with a possible response—a complete sentence. If the stem is a "direct question," then it's a complete sentence, and the responses, too, would **each** be complete sentences. If the stem is a "fill-in-the-blank statement," then the responses are often single words. **Together,** the stem and each response make a complete sentence. If the

stem is an "incomplete statement," then it and the responses are each fragments. **Together,** the stem and each response make a complete sentence.

- *present a clear central issue in the stem*

12. **Do** state the problem/question/sentence in language that is common or appropriate to the job and/or subject matter. The stem should present a clear central issue to be solved. After reading the stem, the student should be able to predict a solution.

13. **Do** make the responses concise and unambiguous.

14. **Do**, when using an incomplete statement, place the blank at the end of the statement.

15. **Do** have the student place the number or letter of the correct response on a blank to the left of the statement or place an "X" through the corresponding number or letter. This facilitates ease of grading.

- *alphabetize response alternatives*

16. **Do**, if terms are used for all four responses, alphabetize the responses.

17. **Do** list numbers, dates, measurements, etc., appearing as responses in ascending order (e.g., a. 1946; b. 1949; c. 1956; d. 1976.)

18. **Do** align decimal fractions or monetary amounts when they appear as responses.

- *use appropriate capitalization and punctuation*

19. **Do** use appropriate capitalization. Always capitalize the first word of the stem. Capitalize the first letter of a response when it answers a question in the stem. Do **not** capitalize the first letter of a response when it completes an incomplete statement in the stem.

20. **Do** use appropriate punctuation. If the stem is an incomplete statement, include no punctuation at the end of the stem. If the stem is a question or a complete sentence with a blank, include the proper punctuation at the end of the stem. Place a period after responses that complete the stem. Do **not** place a period after responses that answer a question or fill in a blank **unless** the responses are complete sentences.

21. **Don't** use responses such as *All of the above; None of the above; Any of the above;* or *a, b, and c.*

22. **Do** use scenarios (case studies or stories) and figures (illustrations, graphics, drawings, tables, samples, etc.) when appropriate. Scenarios should describe a set of circumstances or pose a problem to solve that will require students to apply their knowledge of a competency or competency builder. Scenarios should be stated clearly, briefly, and completely. Ideally, scenarios should be no longer than 6 lines.

- *test only important knowledge*

23. **Don't** test trivial or general knowledge. A stem should require students to use their knowledge of a competency or competency builder to select the best response. They should not be able to choose the answer based on common sense.

24. **Don't** use negative responses. Rephrase the response to make it positive.

- *provide clear directions*

25. **Do** give directions for answering test items.

26. **Do** give an example of how to answer the test items.

27. **Do** prepare a scoring key.

28. **Don't** use stereotypes with regard to age, ethnicity, gender, race, religion, socioeconomic status, or geographic setting.

Example of a Multiple-Choice Type Test

Electric Arc Welding

(Name)

Section I. Multiple-Choice

Instructions: Each of the following statements or questions is followed by four possible answers. Read the statements and answer each carefully. Select the best answer, even though there may be several answers that appear to be correct. One answer is the best because it is most complete in answering the question or completing the statement. Draw an "X" through the letter to the left of the statement that corresponds to the answer selected.

Example:

X b c d The approximate length of the arc when welding with a blue dot electrode is

a. 1/8 inch.

b. 3/8 inch.

c. 1/2 inch.

d. 5/8 inch.

◆ ◆

Multiple-Choice Test Item

a b c d If the weld bead is narrow and high, the trouble is probably that there is too

a. high an ampere setting.

b. low an ampere setting.

c. fast a travel speed.

d. short an arc.

True-False Items

True-false test items are good for testing large amounts of subject matter.

The true-false item presents a statement or question about which the student is to express judgment by indicating whether it is true or false. This item type is best adapted to the testing of a large amount of subject matter in a relatively short period of time. In using the true-false test, there is a danger of overstressing rote memory of detached and unrelated bits of information at the expense of understanding basic principles.

Do's and Don'ts in Writing True-False Test Items

Tips for Writing True-False Items

1. **Don't** use items that are partly true and partly false.
2. **Don't** use double negatives.
3. **Do** write your questions in language that is easy for your students to understand.
4. **Don't** use specific determiners, such as *always, never, all, none, every*.
5. **Do** include only one idea in the question or statement. Double statements are confusing.
6. **Do** have about half of the questions true and half false.
7. **Don't** follow a set pattern or sequence of true and false statements.
8. **Do** avoid having one statement give the answer to another.
9. **Do** frame your questions so that there can be only one interpretation.
10. **Don't** use long, complicated statements.
11. **Don't** quote directly from the textbook.
12. **Do** prepare a scoring key.
13. **Do** consider that the correct score for a true-false test equals the number answered correctly minus the number wrong (S = R-W). This method presumably takes care of guessing.
14. **Don't** use trick or catch questions. **Don't** test on trivial bits of information.

Example of True-False Test

Basic Electricity

____

(Name)

Section II. True and False

Instructions: Answer the following statements true or false. Draw an "X" through the T if the statement is true and through the F if the statement is false.

Example:

X F A blown fuse means that you either have a short in the circuit or an overload.

◆ ◆

True-False Test Item

T F A large-diameter conductor will carry more current than a small one at a given voltage.

Some instructors prefer to use a different format for the true-false test items. This format tends to eliminate the probability of the student's guessing the correct answer. The key word(s) that make the statement either true or false are underlined. If the statement is true, the student writes the word "true" in the blank to the left of the statement. However, if the statement is false (made so by the underlined word or words), the student must substitute the correct word(s) for the underlined word(s) and place the substitution on the line to the left of the statement. An example follows:

Another Type of True-False Test Item

Directions: If the statement is true, write the word "True" on the line to the left of the number. If the statement is false, write the correct term(s) in the blank in place of the underlined words.

__True__ The tool used for planing end grain is called a block plane.

__nail set__ The tool used to place nails below the surface of the wood is called a punch.

Completion Items

Completion items have missing words or phrases.

In the completion item, sentences are presented from which certain words or phrases have been omitted. The student is directed to complete the meaning of each sentence by filling in the word or words that have been omitted.

The completion-type test requires the student to recall correct information. There is little chance for the student to guess.

Subjective judgment is required.

This test is somewhat time-consuming to score because students usually provide a variety of answers that are only partially correct. Subjective judgment is therefore required by the teacher who must determine how much credit to give the student responses.

Do's and Don'ts in Writing Completion Test Items

Tips for Writing Completion Items

1. **Don't** take direct quotations from the textbook. This encourages rote memorization on the part of the student. Rephrase the language of the text.
2. **Do** phrase the statement so that the blank calls for a single specific response. Omit words rather than phrases. Scoring will then be more objective.
3. **Do** make all blanks the same length and long enough to permit legible answers. Varied lengths of lines offer clues to the correct answer.
4. **Do** use language that students understand. Use correct grammar.
5. **Don't** give clues to the answer. Do not make completions depend on grammatical form or "pat" or textbook expressions. *A*, *an*, and verb form give away the answer.
6. **Do** be prepared to accept alternate answers if correct.
7. **Don't** have one statement give the answer to another.
8. **Do** prepare a scoring key. Score by giving a specific weight to each blank correctly filled in.

9. **Do** place the blank at or near the end of the statement. This procedure saves reading time, in that the statement need be read through only once.
10. **Don't** overuse blanks, especially if the sentence is short. This makes it difficult for the test taker to get the meaning of the sentence.

Example of a Completion Test

Horticulture

____
(Name)

Section III. Completion

Instructions: Each of the sentences below has one or more blank spaces, each blank indicating a word (or words) that has (have) been omitted. Read each sentence carefully. You are to choose the one word or set of words that, when inserted in the sentence, best fits in with the meaning of the sentence as a whole. Place your answer on the line to the left of the sentence.

Example:

__spring__ The best time to transplant bare-root plants is in the ________ .

◇ ◇

Completion Test Item

________ A recommended "open shade" tree for residential lawns is the ________ .

Matching Items

Matching items present stimulus lists and response alternatives.

A matching item usually consists of two parallel columns or lists. One list contains the stimulus words or phrases (names, terms, labels, etc.). The other list contains the response alternatives (definitions, achievements, charts and diagrams, books, dates or events, etc.). The student is required to match or associate each item of one column with the term that corresponds to it in the other column. Matching test items can be used to determine student mastery of terms, symbols, parts identification, problem solutions, and classifications.

Do's and Don'ts in Writing Matching Test Items

Tips for Writing Matching Items

1. **Do** construct a test with more than 5 items but less than 10 or 15. Long lists require the test taker to spend too much time hunting through them.
2. **Do** select items from one subject field only. Having more than one subject field in the test is confusing to the student and makes it difficult for the teacher to spot student weaknesses.
3. **Do** arrange names in alphabetical order; dates and numbers in sequence. This saves the test taker's time.
4. **Do** have an excess number of items in the answer column. This lessens the chance of the test taker matching an item by the process of elimination.
5. **Do** keep the two lists entirely on the same page. This saves time and prevents flipping of pages.
6. **Don't** give away the answer with such clues as having some words singular and some plural. Also watch for revealing associations such as nationality, slang expressions, etc.
7. **Do** prepare a scoring key. Score by giving a specific weight to each correctly matched item.
8. **Do** use capital letters to label the parts in the column from which the responses are to be selected.
9. **Do** make sketches or illustrations clean, accurate, and of sufficient size.

Example of a Matching Test

Commercial Art

____
(Name)

Section IV. Matching

Instructions: From Column B, choose the item that matches or connects with each item in Column A. Place the corresponding letter of your answer in the parentheses to the left of the item number in Column A.

Example:

A	B
(B) Picturebook magazine	A. Children's World
	B. Hornbook
	C. Children's Hour
	D. Grasshopper
	E. Green Jeans

◆

Matching Test Item

( ) 1. A folded printed sheet resembling a booklet.	A. Author-Illustrator
	B. Binding Editor
( ) 2. A person responsible for guiding a book through the publishing process.	C. Editor Signature
	D. Signature Binding
( ) 3.	E. Story
	F. Manuscript
	G.

Source: K. Michele Darling, Commercial Art Instructor, Eastland Career Center, Eastland Joint Vocational School, Groveport, Ohio

Interpretation of Data Items

In this type of item, data are presented for the student to consider. Data may be in the form of charts or graphs. Interpretation of the data is also given. The student is required to recognize when an interpretation goes beyond the data and when an interpretation is within the data. The student is asked to "key" the individual interpretations according to a code.

Do's and Don'ts in Writing Interpretation of Data Test Items

Tips for Writing Interpretation of Data Items

1. **Do** use data that are relevant to the subject area being tested.
2. **Do** include only one point in each statement. Avoid statements that are partly true according to the data given.
3. **Do** divide the interpretation statements fairly evenly among the various code divisions.
4. **Do** use correct grammar in constructing the interpretation statements.
5. **Do** prepare a scoring key.
6. **Don't** follow a set pattern when listing the statements. Have an irregular sequence.

Interpretation of Data Test Item

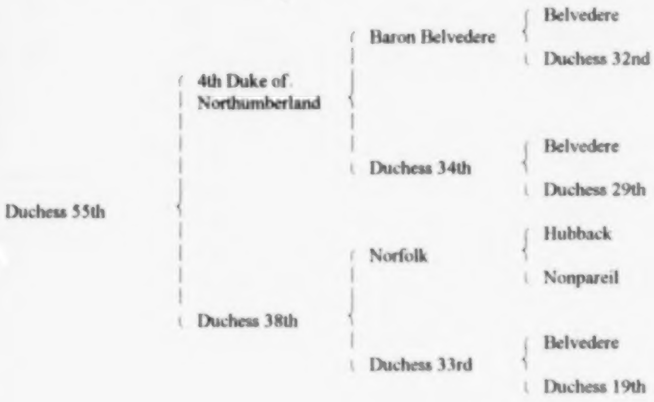
Example of Interpretation of Data Test

Animal Breeding

(Name)

Section I. Interpretation of Data

Instructions: Place a (T) in front of each statement that is true and can be proved by the data below. Place an (O) in front of each statement that may or may not be true, but cannot be answered sufficiently from the data below. Place an (F) in front of each statement that is incorrect according to the data.


Duchess 55th
4th Duke of Northumberland
Duchess 38th
Baron Belvedere
Duchess 34th
Norfolk
Duchess 33rd
Belvedere
Duchess 32nd
Belvedere
Duchess 29th
Hubback
Nonpareil
Belvedere
Duchess 19th

Example:

____T____ Baron Belvedere and Duchess 34th are from the same sire.

◆ ◆ ◆

________ 1. Duchess 19th and Duchess 29th are half sisters.

________ 2. Belvedere is the dam of several animals in the pedigree.

________ 3. Duchess 33rd and Baron Belvedere both carry the same amount of Belvedere blood.

Tips for Administering Written Tests

In administering written tests, it is important to—

- *prepare enough good-quality copies*
- *prepare the setting*
- *prepare students in advance*
- *give clear, complete directions*
- *provide adequate supervision*

1. If a large percentage of a student's grade (unit, competency, grading period, etc.) depends on the test, announce the date of the test ahead of time so students can study.
2. Duplicate the test. Don't write questions on the chalkboard or read them aloud.
3. Produce clean, legible copy. Make extra copies.
4. Fit the test to the time available. Announce the time allotted for the test. Give warning five minutes before the test is to be completed.
5. Administer the test in a comfortable, familiar setting.
6. Seat the student in such a way as to lessen the temptation to copy. Keep "honest people honest."
7. Make sure all students are ready for the test: sharpened pencils; pens available; proper materials; and desks clear of books, notes, and other unneeded articles.
8. Distribute the test papers face down. This permits all students to start at the same time.
9. Explain each test section and the instructions. Once students have begun the test, don't interrupt them to announce a typographical error in the test, make excuses for a poor test item, etc. There is no excuse for you not to be familiar with your own test and not to have made needed editorial changes before distributing the test.
10. Supervise the test. Move quietly about the room during the test to make sure all students are following the directions. Do not perform other teacher duties while the test is in progress.
11. Do not use the test as a form of disciplinary action. Do all you can to ease student tension. An encouraging smile is always helpful.
12. Make certain all students stop work promptly when time is called. Collect test booklets or answer sheets immediately while students are seated. Then call for any other materials.

- *provide timely feedback on test results*

13. Grade and return the test papers promptly. Review them with the class.
14. Have the class evaluate the test. Ask them for suggestions about the test. Take steps to prevent shortcomings when preparing the next test.

Test Your Knowledge

The following test items offer you an opportunity to apply the various principles of test building. These items are **incorrectly** written, each one violating a recommended test building principle—one of the "Do's and Don'ts" listed in this chapter. You are to read each test item carefully for the purpose of **identifying the test building principle it violates**. When you have identified that principle, write the principle completely in Section A below the test item. Then, in Section B, **rewrite** the test item, correctly applying the test building principle that it originally violated.

◆ ◆

I. Open-Ended Items

1. How do you sharpen a kitchen knife?

A. ______________________________

____

B. ______________________________

____

2. Discuss the difference between competency-based education and traditional vocational education.

A. ______________________________

____

B. ______________________________

____

◆ ◆

II. Multiple-Choice Items

a [✓ b] c d 1. The capital of Canada is
- a. Seattle
- b. Ottawa
- c. Montreal
- d. Winnipeg

A. ______________________________

____

B. ______________________________

____

[✓ a] b c d 2. Pesticide labels are
- a. legal documents that are binding on the users of the specific pesticide.
- b. generally written in more than one language.
- c. used only on insecticides.
- d. used primarily on liquid chemicals.

A. ______________________________

____

B. ______________________________

____

◆ ◆ ◆

III. True-False Items

T [✓ F] 1. A teacher should never reprimand a student in the presence of other class members.

A. ______________________________

____

B. ______________________________

____

T [✓ F] 2. A teacher should have control of the classroom situation, since this ensures effective learning.

A. ______________________________

____

B. ______________________________

____

IV. Completion Items

(a) carburetor
(b) proper
(c) main adjusting needle
(d) one and a half turns

1. When the (a)________ of a one-cylinder engine is in (b)________ adjustment, the (c)________ is turned out approximately (d)________.

A. ____
____

B. ____
____

blank

2. You should never sign a __________ contract.

A. ____
____

B. ____
____

◇ ◇

V. Matching Items

From Column B, choose the contract size that matches or connects with each commodity listed in Column A. Place the corresponding letter of your answer in the parentheses to the left of the item number in Column A.

A	B
( ) 1. cattle, feeder	a. 60,000 lbs.
( ) 2. corn	b. 50,000 lbs.
( ) 3. cotton	c. 40,000 lbs.
( ) 4. hogs	d. 5,000 bushels
( ) 5. soybean meal	e. 100 tons
	f. 50 tons

A. ____
____

B. ____
____

_T_ 2. 20 percent of the egg white's grams are fat.

A. ______________________________

____

B. ______________________________

____

Answers to Test Your Knowledge

I. Open-Ended Items

1. How do you sharpen a kitchen knife?

A. **Principle:** #1, page 29. Don't write the test item so broadly that the test taker cannot clearly comprehend the meaning of the question.

B. **Rewrite:** List the steps in using an oilstone to sharpen a kitchen knife.

2. Discuss the difference between competency-based education and traditional vocational education.

A. **Principle:** #2, page 29. Avoid beginning the question with words such as *Discuss*, *Explain*, or *Outline*, which invite too lengthy and, many times, irrelevant answers.

B. **Rewrite:** Describe how competency-based education and traditional vocational education differ in time spent learning the competency.

◆ ◆ ◆

II. Multiple-Choice Items

a b c d 1. The capital of Canada is
a. Seattle
b. Ottawa
c. Montreal
d. Winnipeg

A. **Principle:** #4, page 31. Do make all answer choices appear plausible to the test taker not knowing the correct answer.

B. **Rewrite:** a. Toronto

a b c d 2. Pesticide labels are
- a. legal documents that are binding on the users of the specific pesticide.
- b. generally written in more than one language.
- c. used only on insecticides.
- d. used primarily on liquid chemicals.

A. **Principle:** #10, page 32. Do make answer choices of relatively uniform length.

B. **Rewrite:** a. legal documents.

◇ ◇

III. True-False Items

T F 1. A teacher should never reprimand a student in the presence of other class members.

A. **Principle:** #4, page 36. Don't use specific determiners, such as *always*, *never*, *all*, *none*, *every*.

B. **Rewrite:** A teacher should be permitted to reprimand a student in the presence of other class members if personal safety is an immediate concern.

T F 2. A teacher should have control of the classroom situation, since this ensures effective learning.

A. **Principle:** #1, page 36. Don't use items that are partly true and partly false.

B. **Rewrite:** A teacher should have control of the classroom situation.

◇ ◇

IV. Completion Items

(a) carburetor
(b) proper
(c) main adjusting needle
(d) one and a half turns

1. When the (a)________of a one-cylinder engine is in (b)________ adjustment, the (c)________ is turned out approximately (d)________.

A. **Principle:** #10, page 39. Don't overuse blanks, especially if the sentence is short. This makes it difficult for the test taker to get the meaning of the sentence.

B. **Rewrite:** Use only the blank (d).

blank

2. You should never sign a __________ contract.

A. **Principle:** #5, page 38. Don't give clues to the answer by making completion depend on grammatical form (e.g., *a, an*).

B. **Rewrite:** You should never sign a/an ______ contract.

◇ ◇ ◇

V. Matching Items

From Column B, choose the contract size that matches or connects with each commodity listed in Column A. Place the corresponding letter of your answer in the parentheses to the left of the item number in Column A.

A	B
( ) 1. cattle, feeder	a. 60,000 lbs.
( ) 2. corn	b. 50,000 lbs.
( ) 3. cotton	c. 40,000 lbs.
( ) 4. hogs	d. 5,000 bushels
( ) 5. soybean meal	e. 100 tons
	f. 50 tons

A. **Principle:** #1, page 40. Do construct a test with more than 5 items.

B. **Rewrite:** Add a sixth item (e.g., *soybean oil*), and don't forget to also add another item in Column B (Principle #4: Have an excess number of items in the answer column).

Match each currency (Column B) with the country that uses it (Column A). Place the corresponding letter of your answer in the parentheses to the left of the item number in Column A.

A

( ) 1. Comoros
( ) 2. Bulgaria
( ) 3. Albania
( ) 4. Egypt
( ) 5. Tanzania

B

a. Shilling
b. Franc
c. Lev
d. Lat
e. Lek
f. Pound
g. Dollar

A. **Principle:** #3, page 40. Do arrange names in alphabetical order.

B. **Rewrite:**

1. Albania
2. Bulgaria
3. Comoros
4. Egypt
5. Tanzania

a. Dollar
b. Franc
c. Lat
d. Lek
e. Lev
f. Pound
g. Shilling

VI. Interpretation of Data Item

T 1. There are approximately 32 calories in one egg white and 280 calories in four pieces of toast.

A. **Principle:** #2, page 42. Do include only one point in each statement.

B. **Rewrite:**
1. There are approximately 32 calories in one egg white.
2. There are 280 calories in four pieces of toast.

T 2. 20 percent of the egg white's grams are fat.

A. **Principle:** #4, page 42. Do use correct grammar in constructing interpretation statements.

B. **Rewrite:** A total of 20 percent of the egg white's grams are fat (never start a sentence with a figure).

A variety of assessment forms are used to supplement paper-and-pencil testing.

Alternatives to Written Tests

One of the major disadvantages of paper-and-pencil tests is that they do not provide opportunities for learners to demonstrate what they can do in real life. For this reason, other forms of assessment may be an effective way to supplement written tests. In addition to the assessment techniques presented in this section, additional techniques are presented in the next two chapters.

Alternative assessments focus on learning processes and outcomes.

Many of these alternative assessments focus on learning processes, not just outcomes. This emphasis gives the learner more flexibility. Many of the newer assessment methods actively involve learners in the assessment process itself. For example, students may help choose the methods that will be used to evaluate them.

Interviewing/Oral Testing

Interviews are effective for assessing thinking and knowledge.

Interviews are an excellent means of assessing the learner's thinking and other cognitive skills. This technique is particularly effective as a supplement to performance assessments (See Chapter 7). Many performance assessments are carried out by observing the performance or by examining the end product. In both instances, interviewing or the oral test can be used to elicit additional information.

The interview or oral test consists of asking students questions orally and having them respond orally as well. This technique must be used with care to ensure that only critical information is tested.

"Why" and "What if" are important to oral testing.

Teachers will find the word *Why* and the words *What if* particularly useful in designing the oral test. For example, if sequence is important to the process, the teacher may ask, "Why did you do X before Y?" or "What if you had performed Y before X?"

This assessment technique gives learners greater flexibility in how they choose to respond and gives the teacher greater insight into their knowledge.

Portfolios

A portfolio is a collection of work produced by the learner.

A portfolio is a collection of work produced by the learner. It serves as a record of the student's learning progress.

The portfolio can be used to exhibit the learner's achievement in one or more areas. Portfolios are used most frequently to evaluate language arts skills and, to a more limited extent, for math and science. They may also be used in such diverse areas as architectural drafting, desktop publishing, and home economics.

The portfolio includes comments about how the work was completed.

The samples of work showing learner progress are accompanied by comments on how the work was done. The student may also be asked to evaluate the strengths and weaknesses of the work submitted. An important aspect of this assessment method is that students are involved in evaluating their own work. This is especially true in cases where the student decides what work to include in the portfolio. Students are able to assess their own work and improve their ability to know what to do to improve their performance.

The portfolio provides for learner-centered communication.

The portfolio provides a new opportunity for teacher-student communication centered on the individual student's work.

The decision to use portfolios as a method of assessment requires that consideration be given to the following types of questions:

- What should be in the portfolio?
- Should specific portfolio tasks be assigned?
- What questions should students be asking about the work samples that they include in their portfolios?
- On what basis will the teacher evaluate the portfolio?

These types of questions can be used to spark discussion with students about the nature of the assessment process and for setting criteria for the contents of the portfolios.

Portfolio assessment places considerable demand on the teacher.

Although the use of portfolios has had a positive effect on curriculum and instruction, using portfolios as an assessment tool also has disadvantages. This form of assessment places considerable demand on the teacher's time—choosing portfolio tasks, preparing portfolio lessons, and evaluating the portfolios. It is very difficult to judge portfolios objectively without some very clearly defined criteria for judging the contents.

An example of an assessment instrument for a student portfolio follows.

Portfolio Assessment

Research

• No evidence of research.	0
• Some research, with evidence of reading about problem, but lacking in depth.	15
• Evidence of good research and that student has acquired new knowledge.	25

Systematic Approach

• Only one solution considered. No evidence of thumbnails or rough design.	0
• Thumbnails demonstrate that multiple solutions were considered, but no rough drafts were evident.	10
• A rough draft was produced, but no evidence of thumbnails or multiple solutions evident.	15
• Both thumbnails and rough sketch demonstrate that multiple solutions were considered.	25

Product

• No visual produced.	0
• Limited illustrative material (not very neat).	10
• An attempt at organization (reasonably neat in appearance).	15
• Good attempt at organization and illustration (well organized and neat).	25

Completed Portfolio

• Very poor work; no evidence of craftmanship or no evidence of any work.	0
• Generally poor work with little craftmanship shown.	10
• Average amount of work but with little care or craftsmanship shown.	15
• Good quality work including realistic choice and use of materials (room for improvement).	20
• Evidence of thorough work with attention to detail appropriate to the time allotted.	25

Source: Bruce Purdy, Technology Instructor, Grove City High School, Grove City, Ohio.

Individual or Group Projects

Projects require independent planning or research.

Projects may be structured in many different ways. They can be individual projects or group projects. A project may result in a written product or in another form of tangible evidence that the project was completed. Generally, a project will require independent planning or research to be completed by the learner and a specified date by which the project is to be completed.

Projects can be assessed over time or at a specific point in time. For example, a group of students may have to present their project to other students in the class. Or, the project can be broken into component parts and judged over time.

Projects can demonstrate a broad range of competencies.

Projects are useful in demonstrating a broad range of competencies. Projects present the opportunity for the learner to demonstrate knowledge across areas and domains. This aspect is particularly important in teaching students interdisciplinary skills.

Chapter 6

How Is Affective Learning Assessed?

The affective domain covers the behaviors of a person in regards to attitudes, beliefs and feelings. Networks or groups of related attitudes, beliefs, and feelings form a person's values. Values are ideas of worth. We can infer that people have attitudes, values or feelings by their words and actions (Wolansky, 1985)

The affective domain is made up of five levels of behavior or objectives (Krathwohl, 1964) that emphasize a feeling, an emotion, or a degree of acceptance or rejection.

Receiving is concerned with getting, holding, and directing the learner's attention.

1. ***Receiving.*** Receiving refers to the learner's willingness to attend to a particular stimulus in the classroom and/or laboratory. The learner becomes aware of a stimulus or a happening. As a minimum response, the learner is at least willing to listen or watch passively. From a teaching standpoint, receiving is concerned with getting, holding, and directing the student's attention.

Interest inventories are used to assess performance in the affective domain.

Interest inventories are often used to assess the student's willingness to receive a stimulus. The student responds to a series of items or activities by indicating whether he or she would like to do that activity. For each activity, three simple choices may be provided: *Like* (L), *Neither Like Nor Dislike* (N), and *Dislike* (D).

Example:

Talking with people from backgrounds different from yours	L	N	D
Participating in team-building activities	L	N	D
Going to parties	L	N	D
Reading a book	L	N	D

Example:

Mr. Avery stated in the news broadcast the other day on cable TV that he was in favor of banning the use of the herbicide "Round-Up" on grass growing in sidewalk joints and along curbs. He indicated several reasons for his views. State, in writing, whether you agree or disagree with the views listed.

Responding involves active participation by the learner.

2. ***Responding.*** Responding refers to active participation on the part of the student. At this level, the student not only indicates awareness of a happening (listening, giving attention to) but also reacts to it in some way. The student gives some evidence of showing interest in what is going on. Student performance objectives will stress the seeking out and enjoyment of particular activities.

Assessment at the responding level determines whether the learner does something by choice.

Assessment at this level determines whether the learner does something by choice or because of an outside influence (at teacher's request, for example). Observation of the learner's ongoing behavior in class is one way to conduct the assessment.

Written items may ask the frequency with which the learner performs certain activities. A scale of *Frequently* (F), *Sometimes* (S), *Rarely* (R), or *Never* (N) may be used.

Example:

Volunteer to give an answer in class.	F	S	R	N
Take initiative in talking to a new student in class.	F	S	R	N

Valuing is the worth the learner places on an object.

3. ***Valuing.*** Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. The student displays behavior consistent with a single belief or attitude in situations where he/she is not forced to comply or obey. The student displays this behavior with sufficient consistency so as to be perceived as holding a certain identifiable value.

Assessment in this category would ask the learner to express his or her general reactions to a series of statements. A five-point scale may be useful for response categories: *Strongly Agree* (SA), *Agree* (A), *Undecided* (U), *Disagree* (D), and *Strongly Disagree* (SD).

Example:

Business makes too much profit. SA A U D SD

Single-question types of assessment instruments can also be used effectively in assessing a student's level of internalization concerning values.

Example:

In the movie, *How the West Was Won*, which character did you enjoy the most? Explain why.

Organization is the development of an internally consistent value system.

4. ***Organization.*** Organization is concerned with the bringing together of values and forming a value system. Relationships among values have to be determined. Conflicts between them have to be resolved. Dominant and ever-present values have to be established. Objectives relating to the development of a philosophy of life would fall into this category.

Assessment at the organization level looks at whether the learner has developed a concept of a value or belief.

At this level of internalization, we are assessing whether the learner has developed a concept of a value or belief.

Example:

Please explain why you believe people must be humane when dealing with individuals from different racial, ethnic, or cultural groups.

Example:

With the rest of the class, observe the scheduled videotape and indicate those values that agree with values you hold.

Characterization by a value means that the learner has developed a characteristic life-style.

5. ***Characterization by a Value or Value Complex.*** At this level of the affective domain, the individual acts consistently in accordance with the values he or she has internalized. The value system is such an integrated part of the person that he or she is characterized or described by the value system, e.g., "You can depend on J_____ to be there ready to help if needed."

   At this level, we are interested in collecting evidence about the student's philosophy of life or code of conduct. Assessment items ask the student to take a stand and indicate specifically what he or she would do. The items also may ask students to suggest appropriate actions for others as well.

   Example:

   People are collecting money and supplies for the victims of a flash flood in the south end of town. Consider what you will do privately to help these people.

Assessment concerns the learner's philosophy of life.

As you can readily see by now, the affective domain moves from categories that are relatively simple to categories of objectives that require internalization of a set of attitudes, values, and behaviors.

Assessment Methods

We can only infer that people have attitudes and values.

Assessing behavioral changes dealing with attitudes, values, and appreciations is difficult. Assessing behavior in the affective domain is not as easy a process as assessing learning in the cognitive or psychomotor domains. An attitude is not a behavior that we can examine and measure in the same way that we can measure the ability to sharpen a small pruning knife. We can only infer that people have attitudes, values, and appreciations by their actions and words. In essence, we measure these behaviors indirectly by inference, since they are not observable in themselves. Thus, we look for behavior that would indicate the existence of the attitude, value or appreciation as defined in the student performance objective.

A variety of methods can be used to assess learners in the affective domain.

A number of methods may be used to assess student performance in the affective domain. These methods include records, observations, self-reports, reports of others, sociometric techniques, and projective techniques. When selecting the kind of assessment devices to use, keep two items in mind: (1) your student performance objective(s), and (2) the evidence you need to identify progress that the student is making in reaching the objective(s). The next logical step is to construct the actual assessment devices and items to obtain this evidence.

The first three methods listed above hold the most potential for use in the classroom.

Records

Records provide a systematic means of collecting evidence.

Records provide a systematic means of collecting evidence on which to judge student performance. Attendance records, for example, may provide an indirect measure of students' interest, attitudes, and values.

Written anecdotal records are factual descriptions of meaningful student behaviors and incidents observed and recorded by teachers. Anecdotal records of student behaviors in real-life events can be meaningful. Both positive and negative incidents should be recorded. Records should be made as soon after the observation as possible. Inferences concerning behaviors should be made after several observations have been made; they should not be based on a single observation.

Sample Anecdotal Record

An anecdotal record entry might be as follows:

Class:	Landscaping
Student:	Missy May
Date:	3/22/95
Place:	South side of main building
Observer:	AB

Observation:

Missy was a member of the crew assigned to clear leaves and other debris from under the shrubbery on the south end of the building. When I came around the building to check on progress of the crew, several students were throwing clods of dirt. I heard Missy trying to get the students to stop, telling them that people could see the crew from the road and that the crew was giving the class a bad reputation.

Interpretation:

Missy has progressed from actions, such as throwing clods of soil, to being the "conscience" of a group.

Teacher Observations

Observation can be used to assess individual or group behavior.

Direct observation of your students enables you to make judgments about their social interaction, problem-solving abilities, and work habits, among others. Observation is a technique that can be used to assess individual students or groups of students.

Observations may be formal, using well-devised rating scales and checklists, or informal where students are not aware that they are being rated.

Observation Guidelines

Some guidelines (Wolansky, 1985, pp. 49-51) to consider when using observation as an assessment tool include—

- Determine traits or behaviors to be observed prior to the assessment.

  Identify the behavior (or construct) to be measured. If you want to determine the student's attitudes towards safety practices in a laboratory, instruction should be designed so that attitudes important to the learning activity are clearly identified and stressed.

  For example, if you want to determine the impact on the student of using eye, skin, and lung protection safety devices and practices (e.g., when using chemicals in the greenhouse), the construct "attitude toward the use of eye, skin, and lung protection devices and practices" can serve as an instructional outcome and be evaluated.

- Rate specific aspects of traits or behaviors independently of each other.
- Use appropriate rating scales for assessing specific student traits.
- Weight some items more than others if they merit greater importance.
- Use rating scales that contain sufficient choices for discriminating the extent to which the student exhibits a trait or behavior.
- Treat records of observations as confidential information.

A Likert-type scale is useful in assessing the affective domain.

Use an already-developed assessment instrument if one is available and appropriate for what you want to assess. If no assessment instrument is available, construct one of your own. One common technique in constructing an affective-domain behavior assessment is to use a Likert-type scale. A sample of this type of assessment instrument is shown on the following page.

Sample Observation Tool

Student Rating Sheet

Student Name: ____________________ Date: ____________________

Days Present:_______ Days Absent:_____ Hrs. Missing:_____

1. Adaptability (adjustment to change, ability to learn)

Unable to Adapt	Slow in Learning	Satisfactory	Adapts Readily	Rapid Learner
0 1	2 3	4 5 6	7 8	9 10

2. Dependability (reliability, attendance, punctuality)

Needs Constant Supervision	Needs Frequent Checking	Usually Dependable	Seldom Needs Checking	Highly Reliable
0 1	2 3	4 5 6	7 8	9 10

3. Cooperation (working with others)

Trouble-maker	Has Difficulty	Generally Cooperative	Gets Along Well	Excellent Relations
0 1	2 3	4 5 6	7 8	9 10

4. Initiative (motivation, interest in work)

Lazy Indifferent	Needs Pushing	Adequate	Considerable Interest	Highly Motivated
0 1	2 3	4 5 6	7 8	9 10

5. Personality (courtesy, appearance, public relations)

Rude	Indifferent	Adequate for Job	Polite Courteous	Exceptional
0 1	2 3	4 5 6	7 8	9 10

6. Ability to React to Suggestions

Hostile	Passive No Reaction	Accepts But Not Positively	Good Reaction	Excellent Reaction
0 1	2 3	4 5 6	7 8	9 10

7. Safety (including use and care of tools)

Poor Habits	Unable to Perceive Safe Practices	Usually Safe	Reacts Well to Safety	Very Conscientious
0 1	2 3	4 5 6	7 8	9 10

8. Quality of Work (accuracy, neatness, thoroughness)

Inferior Work	Careless	Meets Requirements	Highly Accurate	Exceptional
0 1	2 3	4 5 6	7 8	9 10

9. Quantity of Work (volume, amount, speed)

Very Slow	Insufficient Work	Moderate	Rapid Worker	Highly Productive
0 1	2 3	4 5 6	7 8	9 10

The incidental observation is valuable as well. This technique is used in addition to the more formal observation. It is used to evaluate the more routine or typical student behaviors.

When students undergo formal observation, they are made aware that they are "performing" for a rating or score. However, when assessing students' social skills, initiative, persistence, or adaptability, students should not be aware of the teacher's appraisal.

Self-Reports and Reports by Others

An interest inventory is an example of a self-report.

The affective domain is particularly suited for active student involvement in the assessment process. Interest inventories and attitude measures that the student completes him/herself are examples of self-reports. In some instances, opinions of peers can be sought regarding a student's performance in the affective domain.

Tips for Assessing Affective Learning

In assessing affective learning, it is important to identify overt behaviors that can be observed.

- Write performance criteria (student performance objectives) for the competencies/competency builders. Students need to know the criteria for acceptable classroom, lab, and job-placement behavior. This knowledge is a necessary component for success in the course.
- Think about and identify behaviors that would indicate the existence of the attitude, value, or appreciation as defined in the student performance objective. Identify overt behaviors (visible, not hidden) that provide evidence of the objective's covert behavior (hidden, not seen, not readily evident).
- If you are using observation, concentrate on one or two specific behaviors during any given observation period.

- Select, modify, or develop instruments for the assessments. The instruments should be designed to collect only the information desired as evidence of a particular behavior. If you can locate an existing instrument to measure the construct, you will save time. Established instruments may have known item validity and reliability.
- Decide who will be observed and when. You have limited time as a teacher to make formal observations with structured instruments.
- Obtain as many observations as possible and review patterns of change.

Assessment of learning in the affective domain is the most challenging.

The affective domain presents the greatest challenge in assessing learners. It is probably the most difficult and complex of all evaluation or assessment tasks. Another problem surfaces as we attempt to define, teach, and assess competencies in the affective domain. There are overlaps in the domain. The dilemma is explained by Wolansky (1985, pp. 46-47):

> It is important for teachers to recognize that the three domains are useful for descriptive purposes, but there are certainly overlaps in the domains and as a result a psychomotor instructional goal may contain an affective objective. Requiring a student to perform with immense precision is very much an attitudinal predisposition. Most athletic coaches are critically aware of the importance of attitudes in the mastery of a complex psychomotor skill.

Chapter 7

How Is Psychomotor Learning Assessed?

While assessment of knowledge can be handled by a written test, assessment of skills calls for a performance testing situation. The assessment technique for testing a learner's ability to accomplish a task under controlled conditions is usually referred to as the performance or skill test. Such tests are designed to assess the learner's ability to perform a task or series of tasks involving behavior ranging from gross bodily movements to the more finely coordinated movements.

Performance tests measure skills that require action.

A performance test does just what the term implies—it is an instrument to help the instructor judge whether or not the student can actually perform the task in a job-like setting to some minimum level of acceptability. Performance tests measure skills that require some type of action: timing (in music), speed (type 60 words a minute), precision (1/1000 inch clearance), sequence (starting the oxyacetylene welder) and appearance (without any dents in the wood).

The psychomotor domain consists of seven categories of learning.

The psychomotor domain comprises movement behaviors. There are seven major categories of learning in the psychomotor domain. The descriptions that follow are adapted from Simpson (1972). Again, these are arranged from the simple to the more complex. A sample student performance objective is shown for each of the major categories in the psychomotor domain.

The student performance objective guides the teacher in determining what tasks a student will have to perform, what procedures or processes a person must execute.

Perception is concerned with obtaining cues from the sense organs.

1. ***Perception***. The first level of learning is concerned with the use of the sense organs (seeing, hearing, tasting, touching, smelling) to obtain cues that guide motor activity. This category ranges from awareness of a stimulus, to selecting task-relevant cues, to relating cue perception to action in a performance.

Example of a student performance objective in this category:

> **Select metal fasteners** *when given project plans, equipment, tools and materials.* All items on the performance assessment should receive a "yes" rating.

Relevant student performance objectives use action verbs such as *describe, detect, differentiate, distinguish, identify, isolate, relate, select, and separate.*

Set refers to the mental and physical readiness to act.

2. ***Set.*** Set refers to the learner's readiness to take a particular type of action. This category includes mental set (mental readiness to act), physical set (physical readiness to act), and emotional set (willingness to act).

Example of a student performance objective in this category:

> **Display constructive interpersonal relationships** *through use of role play, cooperative learning, videos, and guest speakers.* All items on the performance assessment should be rated acceptable.

Relevant student performance objectives use action verbs such as *begin, display, explain, move, proceed, react, respond, show, start,* and *volunteer.*

Guided response includes imitation and trial and error.

3. ***Guided Response.*** In the guided response level of learning, we are concerned with the early stages in learning a complex skill. This level of learning includes imitation (repeating an act demonstrated by the instructor), and trial and error (using a multiple-response approach to identify an appropriate response). Level of competency is judged by the instructor or by a set of criteria.

Example of a student performance objective in this category:

> **Repair extension cords** *when given equipment, tools and materials.* Repair will be done according to generally accepted practices as recorded in the student notebook.

Relevant student performance objectives use action verbs such as *assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fix, grind, heat, manipulate, measure, mend, mix, organize*, and *sketch.*

Mechanism is the category at which the learner performs with a level of confidence and some proficiency.

4. ***Mechanism.*** The mechanism level of learning is concerned with performance acts where the learned responses have become habitual. The movements involved in the task can be performed with some confidence and proficiency. Learning outcomes at the mechanism level are concerned with performance skills of various types, but the movement patterns are less complex than at the next higher level, the complex overt response.

   Example of a student performance objective in this category:

   Cut and fit pipe and tubing *when given project plans, equipment, tools and materials.* All subtasks should receive at least an acceptable rating.

   Relevant student performance objectives use action verbs similar to those on the Guided Response list.

Complex overt response is the skillful performance of motor acts.

5. ***Complex Overt Response.*** In the complex overt response level of learning, we are concerned with the skillful performance of motor acts that involve complex movement patterns. Level of competency is indicated by a quick, smooth, accurate performance, requiring a minimum of energy. This category of learning includes performance without hesitation, and with movements made with ease and good muscle control. Competencies at this level include highly coordinated motor activities.

   Example of a student performance objective in this category:

   Apply finish coat *when given equipment, tools, materials and surface to be protected.* All items on the checklist should be rated acceptable.

Relevant student performance objectives use action verbs similar to those on the Guided Response list.

Adaptation occurs when the learner is skilled enough to meet special requirements.

6. ***Adaptation.*** At the adaptation level of learning, an individual has skills developed to the level that he/she can modify movement patterns to fit special requirements or to meet a problem situation.

   Example of a student performance objective in this category:

   > **Arrange medical intervention** *for slow-to-revive newborn small animals.* Intervention techniques will match condition of the animals as determined by the instructor.

Relevant student performance objectives use action verbs such as *adapt, alter, change, rearrange, reorganize, revise*, and *vary*.

Learning outcomes at the origination level emphasize creativity.

7. ***Origination.*** At the origination level of learning, the learner is able to create new movement patterns to fit a particular situation or specific problem. Competencies at this level emphasize creativity based upon highly-developed skills.

   Example of a student performance objective in this category:

   > **Design and utilize a hair-clipping procedure** *for a given pet.* Type of procedure and its implementation will correlate with standards in the field.

   Relevant student performance objectives use action verbs such as *arrange, combine, compose, construct, create, design,* and *originate*.

Specifying Performance Criteria

Performance criteria are the standards to which a learner must perform.

Performance criteria are the standards to which a given competency or competency builder must be performed. They are expressed as very practical outcome statements. Performance criteria may identify such standards as—

- Maximum time to complete a task
- Safety precautions
- Planning and sequencing
- Correctness of procedures
- Accuracy of measurements

A performance objective has three essential parts.

The degree-of-success component of a student performance objective sets the performance criterion or criteria. As you know, a student performance objective is made up of three essential components: the **performance component** (what behavior is expected of the student), the **condition component** (what is provided to or withheld from the student in the testing situation), and the **criterion component** (at what proficiency level do we expect the student to perform—the criteria by which you will judge students' performance). (For additional guidelines in writing student performance objectives, refer to *Developing Your Curriculum Guide: From Competencies to Student Performance Objectives* by Lowell E. Hedges, 1995.)

Performance criteria assure reliability and validity.

If you have written student performance objectives, you will also have established the performance criteria by which you will judge students' performance. Performance criteria are needed because they help you judge student performance in a reliable and valid way. Well-specified criteria also help to ensure that students understand what is expected of them. Performance criteria originate in the performance component of the student performance objective.

Performance criteria may refer to a product or process.

Performance criteria may refer to a final product produced by the student, a process used, or the speed of work. Criteria associated with the quality of the product often apply to properties that can be measured by objective means. If this is the case, the measurement required and acceptable tolerances should be specified as well. Criteria associated with the process should include only points that are not evident from the product. The description should be as clear as possible so that results can be interpreted consistently. The criterion for the speed of work would be a time limit for the completion of the performance test.

All performance criteria should be written to be judged as objectively as possible.

Developing Performance Tests

Can the learner perform the task in a job-like setting?

A performance test is used to judge whether or not the student can perform a task in a job-like setting to some minimum level of acceptability. In other words, performance tests provide opportunities for the assessment of achievement of the "doing" or behavior component of the objectives.

Step 1: Determine exactly what should be tested.

What is to be assessed?

The first step in developing a performance test is to clearly specify what is to be assessed. The number of tests to be devised, and the type of assessment tasks that will be required for each of them should be determined by—

- the number of competencies, competency builders, or student performance objectives;
- the importance of each of these;
- the ways in which the competency builders or objectives can be grouped together as part of an assessment task; and
- the time that these assessment tasks can be expected to take, and the maximum time it would be reasonable to require.

Step 2: Determine whether process, product, or both is critical.

What aspects of performance should be assessed: process, product, or both?

Process is how the learner performs the task. The product is the end result. Decide which of these is required to judge competency and therefore which should be assessed.

Step 3: Design the assessment tasks.

How can the task be designed so that attainment of related objectives is demonstrated?

The assessment task should be designed to require the student to demonstrate attainment of the performance objectives. In some cases, objectives that are logically related can be grouped together. In this way, one assessment task may serve to assess student performance on a number of objectives. This approach increases the efficiency of the assessment.

Assessment tasks should be designed to be as economical as possible in terms of materials and resources.

Step 4: Specify the performance criteria.

The heart of the performance test is the specific criteria that you will use for judging competence. In most cases the criterion component of the student performance objectives will be specific enough to serve as the criteria for the performance test. If the criterion component lacks specificity, you will need to specify the criteria in greater detail.

What critical steps are involved in the process being performed?

Where **process** is important, the performance criteria will be based on the procedural steps identified during the task analysis. Include only critical steps as performance criteria. These steps should distinguish between someone who can perform the task competently and someone who cannot.

What essential characteristics must the product have?

If the **product** is critical, the performance criteria will describe desirable characteristics of the completed product, such as size, shape, color, conditions, and so on. The main question to answer is, "What essential characteristics must the finished product have for the student to be judged occupationally competent in producing the product?"

Step 5: Determine how the performance criteria or test items will be scored.

Will learner performance be judged by a checklist or by a rating scale?

Two common methods are used to evaluate the learner's performance: a rating scale and a checklist.

There are several advantages of using the checklist. It is easier to score and it introduces less subjectivity. Some rating scales have as many as 10 response categories. The checklist, on the other hand, generally has two. The assessment item is rated as either yes or no; acceptable or unacceptable; satisfactory or unsatisfactory; or pass or fail.

Step 6: Determine the minimum acceptable score.

What is the minimum acceptable score?

Establishing the minimum cutoff score for mastery of performance tests is a difficult task for many instructors and trainers. One approach that may make it easier is to include only essential process- and product-related items. If all of the items are essential, the learner must demonstrate achievement of each performance criterion.

Are there additional, desirable (but not essential) performance criteria that could be specified?

At times, you may wish to include a number of **desirable** performance criteria in addition to the **essential** criteria. Your scoring for acceptable performance may be something like, "For the student to show mastery, all of the 10 essential criteria and 8 out of the 12 desirable criteria must be met." If you use both essential and desirable criteria, consider using different symbols to denote each. For example, essential criteria could be denoted by squares, and desirable criteria by circles.

Step 7: Draft the test.

In preparing the test, it is important to—

- *include a preparation section, instructions, and a scoring rubric*
- *ensure that the directions to the learners are clear*
- *arrange scoring criteria for ease of scoring*

Three sections are important to assembling a performance test: preparation, student instructions, and the scoring rubric.

The preparation section would include a description of where the test is to be held; a description of any preparations that must be made by the instructor; and a list of the materials, equipment, and tools required.

Instructions to the student should clearly describe what is to be done, what materials, equipment, and tools may be used, a brief description of how the test will be assessed, and any time limits.

The scoring rubric should comprise the performance criteria listed in the order that it will be most convenient to use in checking the student's work. Each of the criteria should be described in the past tense.

Step 8: Try out the test.

- *try out the test*

Try out the test with a colleague and one or two students before using it to evaluate students. Remember, several evaluators competent in the task should be able to use copies of your test to evaluate a student and arrive at ratings that are very much similar. Check your test for items that may be vague, poorly worded, or open to several interpretations. It is important that items to be evaluated are precise, observable, and clearly worded.

Step 9: Conduct the performance test.

In conducting the performance test, it is important to—

- *ensure that the area and the students are prepared*

Prepare the work area and provide students with all necessary equipment, tools, materials, instruments, references, drawings, and other items that may be required to complete the test. Remember, the testing situation should require the same equipment, content, sequence, and conditions as in the instructions.

- *permit students to ask questions*

Instruct students to follow directions carefully. Permit them to discuss the required performance and ask questions. Aim for clarification of the task/performance. Correct any misunderstandings for the entire group.

Explain what students are to do and how they are to behave while individuals are being tested.

- *provide a relaxed atmosphere*

Put students at ease before the test begins and maintain an easy, unhurried atmosphere throughout the test. Appear positive, noncommittal and interested throughout the test. (Be aware of nonverbal behavior: a frown, raised eyebrows, etc.)

Do not offer any assistance other than to clarify directions during the test.

- *provide feedback*

Provide students with an opportunity to ask questions and discuss their experiences after the testing is completed. Discuss with them their individual strengths and weaknesses (feedback and follow-up).

Performance Test: Setting Up an Oscilloscope

Examples of Performance Tests

Preparation

The test is to be conducted in the electronics laboratory.

The following equipment is required: an oscilloscope and signal generator.

The oscilloscope and signal generator are preset by the instructor to display a locked 1 kHz sine wave. This is shown to the student.

The following oscilloscope controls are then misaligned by the instructor:

On/Off
Intensity
Focus
Y Attenuator
Timebase speed
Trigger (Sync)

Student Instructions

1. Readjust the oscilloscope controls to obtain the original locked waveform.
2. This assignment must be completed within 45 minutes.

Scoring

The student will have satisfactorily completed this assessment, if both items receive a "yes".

1. Obtained the locked waveform originally displayed.

   Yes ______ No ______

2. The task was completed within 45 minutes.

   Yes ______ No ______

Performance Test:
Word Processing

Preparation

The test is to be conducted in the computer lab.

The following equipment and materials are required: a microcomputer system loaded with the appropriate word-processing software, printer, and paper, and a copy of the letter to be typed (attached).

Student Instructions

You are required to type the letter using a standard business letter format. The format shown on the draft may not be correct.

After typing the letter, proofread it on screen, and produce a printed copy that is suitable for mailing. You must accomplish this task within 30 minutes. The printed version cannot be edited. The letter you print will be used for scoring.

Scoring

The student will have satisfactorily completed this assessment task if he/she receives a "yes" on the criterion identified below. (No errors are permissible).

Produced a correct printed version of the letter suitable for mailing within 30 minutes. (No errors allowable).

Yes ______ No ______

Copy of Letter To Be Typed

◆

May 26, 1995

Mr. Don J. Sweeny
Purchasing Manager
Computer Store, Inc.
1500 Detroit Avenue
Cleveland, Ohio 44102

Dear Mr. Sweeny

I received your P.O. # 14695 today. The item that you ordered has been updated.

The printer that you ordered has been replaced with our model FP-95 which has additional features, is considerably faster, produces better quality output and, therefore, is more expensive. I have enclosed a brochure that gives you all of the information including the new prices.

Please contact me if you are interested and I will arrange for our sales representative to set up an appointment to demonstrate this model to you.

Sincerely,
John Mason
Sales Manager
Enclosure

◆

Performance Test: Operating Power Equipment

Competency: 3.0.10: Operate Power Equipment

Performance Standard:

For acceptable achievement on either the competency or competency builder, all items should receive a "Yes" rating or a "N/A" response.

Directions:

You will operate power equipment, using provided equipment, supplies, and tools. You will practice all safety rules as studied in class. While other students are being evaluated, maintain your normal crew duties. Please give careful attention to your examiner.

Competency Builder 3.0.10.6: Use blower

	Yes	No
Apparel:		
1. Was eye protection worn?	___	___
2. Was ear protection worn?	___	___
3. Was long-sleeved shirt worn?	___	___
4. Were boots worn?	___	___
5. Were long pants worn?	___	___
6. Were gloves worn?	___	___
Refueling:		
7. Was engine stopped?	___	___
8. Was blower operated outdoors?	___	___
9. Was engine cool?	___	___
10. Was check made for fuel leakage?	___	___
11. Was any leakage wiped up?	___	___
Pre-Operation:		
12. Was blower checked for loose parts?	___	___
13. Were parts repaired, tightened or replaced?	___	___
14. Was air filter cleaned?	___	___
15. Was fuel tank filled with approved fuel?	___	___
16. Was blower tube attached?	___	___
17. Was blower at least thirty feet away from other persons?	___	___
18. Was blower at least ten feet away from fueling area?	___	___

	Yes	No
Starting:		
19. Was switch turned to ON?	___	___
20. Was primer pumped 8-10 times?	___	___
21. Was choke closed?	___	___
22. Was blower held with left hand?	___	___
23. Was recoil rope pulled until engaged?	___	___
24. Was recoil rope pulled quickly until engine started?	___	___
25. Was choke lever returned to open position?	___	___
Operation:		
26. Was engine allowed to warm up for 2-3 minutes at low RPM?	___	___
27. Was the strap adjusted?	___	___
28. Were the front bands adjusted?	___	___
29. Was engine allowed to warm up at a fast idle for 2-3 minutes?	___	___
30. Was lowest speed necessary used?	___	___
31. Was blast kept away from other people?	___	___
32. Was blower put on the ground at low RPM?	___	___
Stopping:		
33. Was engine allowed to cool for 2-3 minutes at low RPM?	___	___
34. Was switch turned to OFF?	___	___
Safety:		
35. Were all safety procedures practiced at a satisfactory level?	___	___

Student: ____________________

Date: ____________________

Attempt: 1 2 3 4 ____________________

Comments: ____________________

Examiner's Signature:

____

Source: Eric Boyer, Horticulture Instructor, Eastland Joint Vocational School, Groveport, Ohio. Competency and competency builder from *Turf and Landscape Worker OCAP*, 3/92.

Performance Test: Giving a Baby a Tub Bath

C.B. 2.2.2.7

Student: ____________________

Directions:

You will be given a doll and a box of miscellaneous supplies. You will choose the necessary supplies and give the doll a tub bath.

Process:	**Yes**	**No**
1. Were all necessary supplies gathered before starting?	___	___
2. Was the bath area set up before beginning the bath?	___	___
3. Was a warm, draft-free area selected for the bath?	___	___
4. Was the tub lined with a towel or a piece of foam?	___	___
5. Was the tub filled with 1-3 inches of warm water?	___	___
6. Was baby kept dressed while face and head were washed?	___	___
7. Was baby's face washed with water only?	___	___
8. Was a cotton ball used to wash baby's eyes?	___	___
9. Were the eyes cleaned from the nose out toward the ears?	___	___
10. Were the ears cleaned with another cotton ball?	___	___
11. Were the nostrils cleaned out with another cotton ball?	___	___
12. Was the baby held in the "football hold" while washing the head?	___	___
13. Was the shampoo and rinse water kept out of baby's eyes?	___	___
14. Was baby's clothing removed without causing baby discomfort?	___	___
15. Was the baby lifted feet first into the tub?	___	___
16. Was the baby held securely while being lifted into the tub?	___	___
17. Was the baby's head and shoulders held while soaping his/her body?	___	___
18. Were all parts of the body, including creases, thoroughly washed?	___	___
19. Was the baby turned onto his/her back gently?	___	___
20. Was the baby lifted onto a flat surface to dry?	___	___
21. Was the baby patted completely dry with a towel?	___	___
22. Was the baby dressed completely?	___	___
23. Was the area cleaned up when finished?	___	___

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	Yes	No
Product:		
1. Is baby clean all over?	___	___
2. Is baby dry all over?	___	___
3. Is baby completely dressed?	___	___

SCORE:___/26

Source: Teresa Branham, GRADS Instructor, Eastland Joint Vocational School, Groveport, Ohio. Competency builder from *GRADS OCAP*, 4/92.

Skill Sheet as Basis for Performance Test

If you include skill sheets in your lessons, consider using the sheets as the source of your performance test. Note that in the following example, the statements on the skill sheet are changed into questions for the performance test. This is a very easy and quick method of developing a performance test. Note the very inclusive set of directions for the performance assessment.

◆ ◆

Skill Sheet For Writing A Business Letter

Letter Heading:

1. The heading should include the writer's full address.
2. The heading should include the present date.
3. The heading should be blocked.
4. The heading should be written with open punctuation.

Inside Address:

5. The inside address should give the name and full address of the receiver.
6. The block form should be used for the inside address.
7. If personal title of receiver is used, the full name should also be used.
8. The first line of inside address should be flush with the left-hand margin.
9. The first line of inside address should be four spaces lower than the heading.

Salutation:

10. The salutation should be flush with the left-hand margin.
11. A colon should be used after the salutation.
12. The salutation should be appropriate for the person receiving the letter.

Body of Letter:

13. The body of the letter should be single-spaced, with double spaces between paragraphs.
14. If block form is used for the body, the first sentence of each paragraph should be flush with the left-hand margin.
15. The letter should be free of careless mistakes in grammar and/or spelling.

Complimentary Close:

16. The complimentary close should be appropriate for the person receiving the letter.
17. The first word of the complimentary close should be capitalized.
18. There should be a comma after the entire complimentary close.
19. The complimentary close should be two spaces below the body of the letter.
20. If the block form is used for the letter, the complimentary close should be flush with the left margin.

Signature Block:

21. The writer's signature should be written with a pen.
22. The signature should be free of professional title or academic degree.
23. The writer's name should be typed below the signature, four spaces from the complimentary close.
24. The writer's professional title should be typed below the typed name.

Performance Test: Writing a Business Letter

Directions:

Using the provided address of the receiver, and the suggested scenario for the body of the letter, you will write a business letter. Use the type of format studied in class and recorded in your student notebook. Please use the lined notebook paper that is on the instructor's desk. You will need to provide your own writing instruments. When you have completed your letter, give it to me. You may then quietly organize and prepare your student notebook for evaluation for this grading period. You may also want to review your notes in preparation for a written quiz on business correspondence next week.

	Yes	No
Product:		
1. Does the heading include the writer's full address?	___	___
2. Does the heading include the present date?	___	___
3. Is the heading blocked?	___	___
4. Is the heading written with open punctuation?	___	___
5. Does the inside address give the name and full address of the receiver?	___	___
6. Is the block form used for the inside address?	___	___
7. If personal title of receiver is used, is the full name also used?	___	___
8. Is first line of inside address flush with the left-hand margin?	___	___
9. Is first line of inside address four spaces lower than the heading?	___	___
10. Is the salutation flush with the left-hand margin?	___	___
11. Is a colon used after the salutation?	___	___
12. Is the salutation appropriate for the person receiving the letter?	___	___
13. Is the body of the letter single-spaced, with double spaces between paragraphs?	___	___
14. If block form is used for the body, is the first sentence of each paragraph flush with the left-hand margin?	___	___
15. Is the letter free of careless mistakes in grammar and/or spelling?	___	___
16. Is the complimentary close appropriate for the person receiving the letter?	___	___
17. Is the first word of the complimentary close capitalized?	___	___
18. Is there a comma after the entire complimentary close?	___	___

	Yes	**No**
19. Is the complimentary close two spaces below the body of the letter?	___	___
20. If the block form is used for the letter, is the complimentary close flush with the left margin?	___	___
21. Is the writer's signature written with pen?	___	___
22. Is the signature free of professional title or academic degree	___	___
23. Is the writer's name typed below the signature, four spaces from the complimentary close?	___	___
24. Is the writer's professional title typed below the typed name?	___	___
Total:	___	___

Student: ______________________________

Date: ______________________________

Attempt: 1st 2nd 3rd 4th ______________________________

Instructor: ______________________________

Assessing a Competency and Competency Builders

A curriculum framework provides a basis for performance assessment.

The following example illustrates how a performance test is constructed using a curriculum framework such as Ohio's OCAPs.

Sample from a Curriculum Framework

Unit X: Small Engines

Competency (Terminal Performance Objective):

X.3 **Maintain small engines** when given tools, equipment, supplies and a one-cylinder, four-cycle engine. All items on the performance assessment should receive a "yes" rating.

Competency Builders (Enabling Objectives):

X.3.1 **Service air cleaners and filters** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.2 **Change crankcase oil** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.3 **Maintain cooling system** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.4 **Maintain spark plugs** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.5 **Maintain combustion chamber** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.6 **Adjust carburetor** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

X.3.7: **Store engine** when given tools, equipment, supplies, and a one-cylinder, four-cycle engine that has been in use. All items on the performance assessment should receive a "yes" rating.

A section of the performance test is devoted to each competency builder.

The performance assessment instrument is used for assessing learner performance of the competency builders comprising a competency as well as the competency itself. The assessment instrument contains a section for each competency builder (enabling objective). As the student performs a competency builder, his/her performance is checked off as acceptable (yes) or unacceptable (no). If a student needs to repeat several of the competency builders, but not all, only those applicable sections of the instrument need be used.

When the lesson—on maintaining small engines, for example—has been completed, students will need to be evaluated on their level of competency in maintaining an engine (terminal performance objective). The performance assessment instrument can then be used in its entirety.

One performance test for a competency is sufficient.

Only one performance assessment instrument needs to be constructed and used for the competency. This procedure is efficient, neat and clean.

Are the performance criteria specific enough?

Note: Upon reading the competency and competency builders for small engine maintenance, some readers will think, "The conditions component of the objectives seems to be specific enough, but the criterion component isn't very specific. Criteria or standards of expected performance ought to be stated something like, *according to the owner's manual*, or *according to manufacturer's specifications*, or *so that the engine runs smoothly*, or something like that. But to state how well I expect students to perform with words such as *all* *items on the performance assessment should receive a Yes rating*, well, that's not very specific."

The reader ought to look carefully at the performance assessment instrument for small engine maintenance, which follows. How much more specific can one get than the items in the assessment instrument? These evaluation items came from the owner's manual, written by the manufacturer of the engine.

Referring to a performance assessment instrument in the criterion statement is being specific. And if specifics change with time, at least the *objective* (competency/competency builders) doesn't have to be rewritten.

And another thought: What would a performance objective look like if it included the very *specific* items from the assessment instrument? Each performance objective would require a full half page or more. If some teachers now find writing a short performance objective a chore, how would they feel if they wrote performance objectives to the level of specificity found in the performance assessment instrument: very specific—right from the owner's manual? The answer is obvious.

For specificity, use a performance assessment instrument when practical to do so. For the curriculum framework shown earlier for small engines, the assessment instrument might look as follows:

Small Engine Maintenance

Competency: X.3: Maintain small engines

Performance Standards:

For acceptable achievement on either the competency or the competency builders, all items should receive a "Yes" rating or "N/A" response.

Directions:

Using provided tools, equipment, supplies, and a one-cylinder, four-cycle engine, you will perform maintenance on all systems. You will practice all safety rules as studied in class. Let the teacher know when you are ready to begin. While other students are being evaluated, organize and prepare your own notebook for teacher evaluation. You may also want to review your notes in preparation for a written test.

Competency Builder X.3.1: Service air cleaners and filters

	Yes	No
Oil Foam Type:		
1. Were the wing nut and cover carefully removed?	___	___
2. Was the spongelike foam element carefully removed from the base?	___	___
3. Was the foam washed in kerosene or water with detergent?	___	___
4. Was the excess liquid squeezed from the foam?	___	___
5. Was the foam dried by squeezing it with a dry cloth?	___	___
6. Was the foam saturated with the motor oil recommended for the engine?	___	___
7. Was the foam squeezed to remove the excess oil?	___	___
8. Was the air cleaner carefully reassembled?	___	___
Dry Element Type:		
9. Was the metal cover and element carefully removed?	___	___
10. Was the bottom of the element tapped on a flat surface to dislodge large particles of dirt and chaff?	___	___
11. Was the element carefully reinstalled?	___	___
Oil Bath Type:		
12. Were the nut and top cover carefully removed?	___	___
13. Was the wire mesh core and metal container carefully lifted out?	___	___
14. Was the oil and the dirt poured out of the container, and the container washed in kerosene or varsol?	___	___
15. Was the container wiped dry?	___	___
16. Was the recommended oil added to the mark on the container?	___	___
17. Was the wire mesh flushed in kerosene or varsol?	___	___
18. Was excess solvent shaken off the core?	___	___
19. Was the unit carefully reassembled?	___	___

Competency Builder X.3.2: Change crankcase oil

	Yes	No
20. Was the engine operated until it was warm?	___	___
21. Was the oil drain plug replaced and tightened after the oil was drained?	___	___
22. Was oil chosen that was recommended by the manufacturer?	___	___
23. Was the crankcase refilled with new oil through the oil fill plug?	___	___
24. Was the recommended amount of oil used?	___	___

Competency Builder X.3.3: Maintain cooling system

	Yes	No
25. Was compressed air or a brush used to remove grass, chaff, and dirt from the fins and from under the shroud?	___	___
26. Was the shroud removed if compressed air did not dislodge all materials?	___	___

Competency Builder X.3.4: Maintain spark plug

	Yes	No
27. Was the wire removed from the plug and fastened away from the engine block?	___	___
28. Was a plug wrench of the correct size used to remove the plug?	___	___
29. Were all deposits scraped off by using a pocket knife or similar tool?	___	___
30. Was the plug soaked in a commercial solvent?	___	___
31. Was the plug wiped dry?	___	___
32. Were electrodes filed with a point file to restore their flat surfaces?	___	___
33. Was the plug regapped to .030 inch, or as recommended by the manufacturer, using a wire gauge?	___	___
34. Were all dirt particles blown out with compressed air?	___	___
35. Was the plug replaced and tightened until the gasket was partially flattened?	___	___

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Competency Builder X.3.5: Maintain combustion chamber

	Yes	No
36. Was the cylinder head removed and all carbon scraped from all surfaces (assumed 150 hours of operation)?	___	___
37. Was the piston all the way up and the valves closed?	___	___
38. Was a smooth scraper used to remove carbon deposits?	___	___
39. Was compressed air used to blow away all carbon chips?	___	___
40. Were all gasket surfaces cleaned with a smooth scraper?	___	___
41. Were head bolts replaced and tightened in correct sequence?	___	___
42. Were the bolts torqued according to manufacturer's specifications?	___	___

Competency Builder X.3.6: Adjust carburetor

	Yes	No
Idle Mixture:		
43. Was the engine run until it was up to the recommended operating temperature?	___	___
44. Was the idle speed adjustment set so the engine idled at the recommended speed?	___	___
45. Was the idle mixture adjustment screw slowly turned clockwise until the engine slowed down and started to labor?	___	___
46. Was the screw slowly turned counterclockwise until the engine ran smoothly and then decreased in speed?	___	___
47. Was the screw turned in the opposite direction to the point where the engine ran the most smoothly?	___	___
48. Was the idle speed adjustment reset so the engine idled at the specified speed?	___	___
Main Mixture:		
49. Was the engine up to operating temperature?	___	___
50. Was the idle speed set to manufacturer's specifications?	___	___

	Yes	No
51. Was the idle mixture correctly adjusted?	___	___
52. Was the throttle set at its high-speed operating position?	___	___
53. Was the main mixture adjustment screw slowly turned clockwise until the engine ran fast and then began to slow down?	___	___
54. Was the screw slowly turned counterclockwise until the engine ran fast and then began to slow down?	___	___
55. Was the screw slowly turned in the opposite direction until the engine ran smoothly?	___	___
56. Was the engine put under load to check its performance?	___	___
57. If the engine did not accelerate or pull well, was the screw turned counterclockwise slightly to make the mixture richer?	___	___

Competency Builder X.3.7: Store Engine

	Yes	No
58. Was the fuel tank drained?	___	___
59. Was the fuel shut-off valve opened, and the engine run until all fuel was burned?	___	___
60. Was the spark plug removed and 2 to 3 tablespoons of clean engine oil poured into the cylinder to prevent rust?	___	___
61. Was the spark plug reinstalled?	___	___
62. Was the crankshaft turned slowly 3 or 4 times to distribute the oil?	___	___
63. Was the exterior cleaned?	___	___
64. Was the engine stored off the ground indoors?	___	___

Safety:

65. Were all safety procedures practiced at a satisfactory level?	___	___

Student: ______________________________

Date: ______________________________

Attempt: 1 2 3 4 ______________________________

Instructor's Signature: ______________________________

Performance Tests for Special Needs Learners

Performance tests can also be constructed for learners with special needs. The following example describes such an assessment used as a semester examination.

In developing performance tests for special needs learners, it is important to—

- *have a separate station for each subject*
- *arrange tables in an easy-to-follow pattern*
- *provide students with initial instructions while they are outside the classroom*
- *direct students when to change stations*

Semester Exam for Special Needs Students

The exam is divided into 11 stations, with each station testing knowledge or skill on a specific subject covered during the semester.

The room is set up with 11 separate tables—each representing a station. At each table a sheet of laminated paper with the station number on it is taped to the table so that it can be clearly read. The instructions for each station are also laminated and taped to the table. The tables are arranged in numerical order in an easy-to-follow pattern. Taped to the side of each table is a legal-sized envelope into which students place the completed test papers for that station. Students are better able to concentrate on the task at hand if they are not overwhelmed with too many papers. Also, this procedure gives students a feeling of accomplishment as they finish each part of the test.

Initial instructions for the exam are given to students while they are outside the classroom. They are asked not to bring paper or writing instruments with them. Each student is given a pen for use during the test. (Note: Some students who prefer to write in pencil are constantly sharpening them, and this may be a distraction for the rest of the group).

Each student is given a number and asked to go to the table marked with that number when they enter the room. They are also told to go to the next higher-numbered table when directed to change stations. Once they make it to station 11 they are guided on where to go next.

Once the exam begins, students are permitted 9-10 minutes at a station. They wait at the station until the following announcement is made, "Please make sure that your name is on your paper. You have one minute to finish your station . . . . Please go to the next station."

- *provide supplemental activities for more advanced students*

To take into account the varying amounts of time that it will take students to complete the test papers, it is a good idea to include some essay-type items at some stations and supplemental materials at others for the more advanced students. Some stations may be too easy for some students and too difficult for others.

- *give students a break*

At the completion of station 6, students are permitted a 10-minute break. It is important to note what stations students should be going to after the break.

Stations

Station 1

Personal Protective Equipment

This station requires students to know the six major pieces of protective equipment and place them on an outline drawing of a person. (OCAP 1.0.2.2–1.0.2.9)

Materials at this station:

test paper with drawing

Station 2

Pay-in Sheet

The pay-in is to keep a record of the customer accounts. Using a calculator, the student needs to total monies received from sales. (OCAP 5.0.1.7, 5.0.2)

Materials at this station:

3 checks, 2 one-dollar bills, 1 ten-dollar bill, 2 quarters, 1 dime, 1 nickel, a calculator, test paper

Station 3

FFA

Students need to share information they have learned about the FFA.

Materials at this station:

FFA notebook with the FFA emblem on it, test paper containing basic questions

Station 4

Invoice

At this station, students need to show they can read an invoice by answering questions about the invoice. (OCAP 4.0.1)

Materials at this station:

12-inch ruler, invoice, test paper containing questions about the invoice

Station 5

Soils

At this station, students are given six soil amendments that they must identify. They must also name two main functions of soil. (OCAP 7.0.2.5)

Materials at this station:

six glass containers with different soil amendments, test paper for recording answers

Station 6

Photosynthesis

Students are asked to give the equation for photosynthesis as well as the definition. This station also has some questions about light.

Materials at this station:

test paper with basic questions about terminology and concepts

Station 7

Insecticide Label

Students are given a sample chemical label. They are asked to read the label to find certain information. (OCAP 1.0.1.1, 1.0.1.13, 1.0.2.1, 1.0.1.14, 7.0.8.6, 1.0.2.9)

Materials at this station:

sample insecticide label, highlighter, test paper listing items to highlight on the label

Station 8

Greenhouse

Students are asked to draw and label five different greenhouse structures. (OCAP 2.0.1.5)

Materials at this station:

test paper for the five drawings

Station 9

Plant Names

Students are asked to identify, from memory, plants by name (some students are required to match names to plants). These plants are on the Ohio FFA State Contest list.

Materials at this station:

10 foliage plants, test paper for recording answers

Station 10

Foiling, Bow-Making, and Pot-Tying

Students are asked to foil a pot, make a bow, and make a pot-tie on the pot. (OCAP 4.0.5.5)

Materials at this station:

foil, ribbon, wire, Cowee sticks, 6" plants, scissors, ruler, wood labels

Station 11

Flower Parts

Students are asked to name the male and female structures on a flower. (Some students are given a list of names from which to choose.)

Materials at this station:

live flower samples, flower part chart labeled with letters to match that on the test paper, test paper containing questions pertaining to parts of a flower

Scoring

Tests are scored on a separate test sheet, with each station having a space for a score. This grading sheet is handed back to the students with the scores and a grade. The overall grade sheet was designed with the hopes of encouraging students to first observe how they scored on the test overall and which stations presented them with the greatest difficulty. They could then have access to individual test papers.

Semester Exam Grades

At each station you were able to get a total of 10 points. Some stations had bonus points.

Station	**Score**
1. P.P.E.	______
2. Pay-In Sheet	______
3. FFA	______
4. Invoice	______
5. Soils	______
6. Photosynthesis	______
7. Insecticide Label	______
8. Greenhouse	______
9. Plant Names	______
10. Foiling, Bow-Making, Pot-Tying	______
11. Flower Parts	______

TOTAL: ______

TOTAL POSSIBLE POINTS: 110

GRADE: ______

Source: Michelle Bogue, Floriculture Instructor, Toledo Agriculture Education Center, Toledo, Ohio. Competencies and competency builders from *Floriculture and Greenhouse Worker OCAP*, 3/92.

Chapter 8

How Do You Track and Report Results?

One of the major difficulties facing classroom teachers is translating the results of various performance assessments into letter grades. A typical question heard from teachers is, "How can all this information be recorded in a single letter grade?" Typical concerns include—

- Emphasizing student grades may have a negative effect on student motivation.
- If a student successfully completes a performance test, should he/she receive an A for the course?
- Grading is not likely to be consistent across teachers.
- A single letter grade does not provide sufficient information about a student's performance in academic skills, occupational skills, and employability skills.

The debate over grading and reporting continues.

Guskey (1994), recognizing that the debate over grading and reporting continues, identifies five points of agreement about which practices benefit students and encourage learning:

Five Points of Agreement

1. Grading and reporting aren't essential to instruction. Teachers do, however, need to check regularly how students are doing, what they've learned, and what problems they've experienced.
2. No one method of grading and reporting serves all purposes well.
3. Regardless of the method used, grading and reporting remain inherently subjective.
4. Grades have some value as rewards, but no value as punishments.
5. Grading and reporting should always be done in reference to learning criteria, never on the curve.

Grades should be based on performance criteria.

As a classroom teacher, you will have to continue to meet the grading and reporting requirements set by your school district. It will be easier for you, however, to arrive at a letter grade, if necessary, based on results of continued and ongoing learner assessments.

Learner Profiles

Profiles draw on many sources to document a learner's achievements .

Profiling is a means of providing relevant information in a structured and reliable way. The profile is based on systematic record keeping. Two major types of profiles are in use: program profiles and learner-centered profiles. Learner-centered profiles put together a student's achievements and experiences from a variety of sources—both curricular and extracurricular. Program profiles are those intended specifically as a bridge between schooling and employment. These profiles are based on the learner objectives.

Profiles must be regularly updated.

In learner-centered profiles, three types of information are recorded: student achievements, experiences, and interests. Profiles are updated at regular intervals by identifying what the student has attained and entering specific examples to support the claims.

Reporting Principles

Several reporting principles can be used to guide the development of learner profiles:

- Structure the profile report so that pertinent information can be located quickly.
- Report only what the student has achieved.
- Involve the student in the review process.
- Require each student to maintain a record of accomplishments.

A well-constructed learner profile provides the student with additional information to provide to a prospective employer. Students making the transition from school to work have often not had the opportunity to build a track record of accomplishments and experience.

Career Passports

Students can share career passports with potential employers.

A career passport identifies the competencies that students have mastered based on the particular needs of the business or industry that will eventually hire the graduate. Students can share their career passports with potential employers as proof of demonstrated abilities and accomplishments.

Binders and other items for career passports are available at the Vocational Instructional Materials Laboratory, The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210-1090.

External Certification

Credentialing of qualifications is gaining in popularity.

External certification or credentialing of qualifications is gaining popularity along with the increased emphasis on assessment. Generally, external organizations that award certificates for recognized competence base their assessments on standards that are recognized nationally or even internationally. Although the United States does not have a central system for certification in all occupational areas, many professional associations are active in developing standards and certifying individuals who meet the stringent qualifications.

As a teacher, you may wish to seek out the organizations and agencies that offer value-added certification to your students.

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